

Draft Finding of No Significant Impact

Construction of Remote Delivery Facility
and Perimeter Road Widening at DCEETA
US Army Garrison Fort Belvoir
Directorate of Public Works
Fort Belvoir, Virginia

Name of Action: Construct and operate a Remote Delivery Facility (RDF) at the William Woods Road / Telegraph Road intersection in the North Post area of Fort Belvoir.

Description of Proposed Action: Under the Proposed Action, the proposed facilities would be utilized to isolate explosives detection of incoming delivery vehicles, mail screening, and non-employee visitor processing from the main DCEETA complex. The RDF will be constructed on an estimated 15.6-acre (6.3 hectare [ha]) parcel of land 400 feet (122 meters) southeast of Telegraph Road in the northeast quadrant of the DCEETA complex. In addition, the existing William Woods Road entry would be widened, and a 1.6-mile (2.42 km) section of the east perimeter road would be widened from one to two lanes. All three project elements to include site preparation and utility relocation would be conducted inside the DCEETA perimeter fence. The Proposed Action Alternative described in this document would provide a safe distance between the delivery vehicle/non-employee visitor screening area and the main DCEETA complex in accordance with Department of Defense Antiterrorism/Force Protection requirements. Secondly, widening the east segment of the east perimeter road would provide added perimeter patrolling flexibility for the unmanned portion of the perimeter road.

Project Alternatives: In addition to the Proposed Action Alternative, a No Action Alternative was evaluated. The No Action Alternative is not acceptable because it does not meet force protection/safety requirements for mail and other deliveries or for visitor processing.

Environmental Consequences: The Environmental Assessment (EA) identified potential impacts of the Proposed Action and described measures to reduce effects on human health and the environment. Impacts identified and mitigation measures developed include:

Land Use Plans, Aesthetics, and Coastal Zone: The Proposed Action Alternative would be consistent with current land use patterns and the Fort Belvoir Master Plan. The project is consistent to the maximum extent practicable with the Virginia Coastal Resources Management Program.

Natural Resources: Implementation of the proposed action would have a long-term direct impact on renewable natural resources, topography, soils and geomorphology. A total of 15.6 acres (6.3 ha) of land would require clearing and grading for proposed RDF development and entry point. An additional 7.6 acres (3.08 ha) would be permanently cleared along the west side of the perimeter road. Of this, a 2.58-acre (1.03 ha) area would be reseeded and replanted with native tree species after construction completion. The construction would create minor short-term impacts on stream resources and environmentally sensitive areas, such as wetlands and Chesapeake Bay Preservation

Areas including Resource Protection Areas (RPA) designated by Fairfax County. The proposed RDF project would involve the filling or alteration of approximately 0.03 acres (0.012 ha) of bed and bank and 0.20 acres (0.08 ha) of vegetated wetland, while the perimeter road widening would impact 0.12 acres (0.049 ha). Wetland impacts would likely be authorized under the US Army Corps of Engineers Nationwide Permits, their State Program General Permit (SPGP), and the Virginia DEQ wetland general permits. The Proposed Action Alternative would cause minor short-term impacts on the local vegetation and wildlife. Direct, short-term impacts during construction would include loss of vegetation and displacement of animal species such as deer, fox, smaller mammals, reptiles and amphibians. The long-term loss of forest and wildlife habitat is considered minimal compared to Fort Belvoir's total forest and wildlife habitat.

Cultural Resources: Based on a Cultural Resources Assessment of the area, a potentially eligible archeological site as identified in the vicinity of the proposed site. Archaeological site 44FX459 (known as Potter's Hill and the Potter-Milan Family Cemetery) located between the proposed RDF project area and Telegraph Road, may be eligible for the National Register for Historic Places (NRHP). An evaluation of the impact of the proposed action on these sites is ongoing. Any adverse effects of this undertaking will be mitigated in accordance with the NEPA requirements and AR 200-4. No historic structures will be impacted by the proposed project.

Storm Water Quality: The Proposed Action Alternative would require 23.2 acres (9.4 ha) to be cleared and graded for the three projects (entry, RDF and perimeter widening), 9.44 acres (3.9 ha) would be impervious surface area, such as parking areas, roadway, truck turnarounds, sidewalks, and buildings, would be added to the current drainage area. All three projects would increase total impermeable surface within the Piney Run subwatershed by less than 0.2 percent and the Dogue Creek watershed by 0.4 percent. Approximately 3.08 acres (1.25 ha) would be restored through landscaping. Clean Water Act Permits and State Water Quality Certification will be obtained prior to construction. Best Management Practices (BMPs) in the 1992 Virginia Erosion and Sediment Control (E&S) Handbook would control and reduce soil erosion and an E&S permit will be obtained prior to construction.

Transportation & Traffic: The Proposed Action Alternative would have minimal long-term impact on transportation flow and safety along Telegraph Road. A right-turn queuing lane from the eastbound lane of Telegraph Road would be constructed to provide delivery trucks and non-employee visitors a safe entry into the RDF area through the William Woods Road Gate.

Conclusions: On reviewing the Environmental Assessment and other project information, the Garrison Commander of the US Army Garrison Fort Belvoir has concluded that the Proposed Action Alternative would not have a significant adverse affect on the environment. Therefore an Environmental Impact Statemenent (EIS) is not needed.

Notice of Availability: This Environmental Assessment will be available for public review at the John Marshall, Lorton, Kingstowne, Sherwood Regional and Fairfax City Regional branches

of the Fairfax County Public Library; and on the installation web site at <http://www.belvoir.army.mil>. An additional copy is available at the Fort Belvoir Directorate of Public Works, 9430 Jackson Loop, Suite 100, Fort Belvoir, VA 22060-5116, (703) 806-4007 during normal business hours, Mon. - Fri. 7:30 a.m. to 4 p.m.

Interested parties are invited to submit written comments or e-mails. For consideration, all comments must be received on or before 30 days after publication of this notice. Comments may be mailed to the **Commander, U.S. Army Garrison Fort Belvoir, 9430 Jackson Loop, Suite 100, ATTN: IMNE-BEL-ELE, Fort Belvoir, VA 22060-5116**. E-mail comments will also be accepted at *environmental@belvoir.army.mil*. The Garrison Commander, Fort Belvoir, will consider comments received within the 30-day comment period before making a decision to sign a Final FONSI. For more information, contact Mr. Patrick M. McLaughlin at (703) 806-4007 or at the above e-mail address.

ENVIRONMENTAL ASSESSMENT

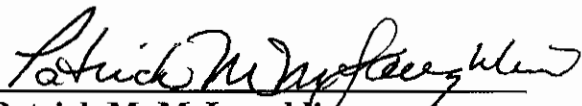
**DEFENSE COMMUNICATIONS-ELECTRONICS EVALUATION
AND TESTING ACTIVITY (DCEETA)**

**CONSTRUCTION OF REMOTE DELIVERY FACILITY AND
PERIMETER ROAD WIDENING**

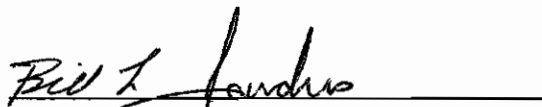
US Army Garrison Fort Belvoir, Virginia

AUGUST 2005

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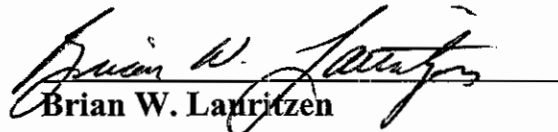

Brian W. Lauritzen
Colonel, US Army
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EXECUTIVE SUMMARY

The Defense Communications-Electronics Evaluation and Test Activity (DCEETA) at Fort Belvoir would construct and operate a Remote Delivery Facility (RDF) at the William Woods Road / Telegraph Road intersection in the North Post area of Fort Belvoir. The proposed RDF project site encompasses an estimated 15.6 acres (6.3 hectare [ha]) 400 feet (122 meters) southeast of Telegraph Road in the northeast quadrant of the DCEETA complex. In addition, the existing William Woods Road entry (front cover) would be widened, and a 1.6-mile (2.42 km) section of the east perimeter road would be widened from one to two lanes. All three project elements to include site preparation and utility relocation would be conducted inside the DCEETA perimeter fence.

Implementation of the proposed action alternative would have a long-term direct impact on renewable natural resources, topography, soils and geomorphology. A total of 15.6 acres (6.3 ha) of land would require clearing and grading for proposed RDF development to include the entry point. An additional 7.6 acres (3.08 ha) would be permanently cleared along the west side of the perimeter road. Short-term impacts to soils to include a net reduction of native vegetation would occur from erosion during clearing and grading during construction. Best Management Practices (BMPs) in the 1992 Virginia Erosion and Sediment Control Handbook would control and reduce soil erosion.

Construction would create minor short-term impacts on stream resources and environmentally sensitive areas, such as wetlands and Chesapeake Bay Preservation Areas including Resource Protection Areas (RPA) designated by Fairfax County. Based on a revised site plan, roadway/utility line crossings would impact one jurisdictional palustrine forested wetland and three narrow jurisdictional stream (bed and bank) wetlands. The east perimeter road widening would impact one jurisdictional palustrine forested wetland and seven narrow jurisdictional bed and bank-type streams.

Minor short-term impacts would be incurred by the vegetation and wildlife during construction to include loss of vegetation and displacement of animal species such as deer, fox, and smaller mammals. The long-term loss of forest and wildlife habitat is considered minimal compared to Fort Belvoir's total forest and wildlife habitat.

Based on a Cultural Resources Assessment of the area, a potentially eligible archeological site as identified in the vicinity of the proposed site. Archaeological site 44FX459 (known as Potter's Hill and the Potter-Milan Family Cemetery) located between the proposed RDF project area and Telegraph Road, may be eligible for the National Register for Historic Places (NRHP). An evaluation of the impact of the proposed action on these sites is ongoing. No historic structures will be impacted by the proposed project.

Construction and operation of the RDF would have negligible impact on existing infrastructure, such as water supply, sanitary sewer, electricity, natural gas, and heating/cooling systems. Of the 23.3 acres (9.4 ha) of land to be cleared and graded for the three projects (proposed entry, RDF facilities, and the perimeter road widening), 9.44 acres (3.9 ha) would be converted to impervious surface area, such sidewalks, buildings and parking lots and would be added to the current drainage. Approximately 3.08 acres (1.25 ha) would be landscaped, of which 0.3 acres (0.12 ha) would be within the entry point and RDF areas and 2.58 acres (1.03 ha) along the west side of the perimeter road.

The operation of the RDF would have minimal long-term impact on transportation flow and safety along Telegraph Road. A Virginia Department of Transportation (VDOT) approved work schedule for construction vehicle traffic would reduce traffic congestion at the William Woods Road Gate and along Telegraph Road. A right-turn queuing lane in the eastbound lane of Telegraph Road would be constructed to provide delivery trucks and non-employee visitors a safe entry into the RDF.

Under the No Action Alternative, the Army would not construct the RDF and the William Woods Road Gate would remain closed. Non-employee and delivery trucks would continue to be inspected at the Main DCEETA Gate at Road B and Telegraph Road and the east perimeter road would remain an impassable 8-foot (2.44 m) wide road. This alternative is not considered reasonable to resolve the deficiency in force protection safety requirements for mail and other deliveries and for visitor processing at the DCEETA complex. The No Action Alternative is, however, presented in this EA as a baseline condition against which the impacts of the proposed action would be evaluated.

Based on the EA and other project information, the Garrison Commander of the US Army Garrison Fort Belvoir has concluded that the Proposed Action will not have a significant adverse affect on the environment. An Environmental Impact Statement (EIS) is not needed.

1 PURPOSE AND NEED

The Defense Communications-Electronics Evaluation and Testing Activity (DCEETA) proposes to construct and operate a Remote Delivery Facility (RDF) at the William Woods Road / Telegraph Road intersection in the North Post area of Fort Belvoir (Figures 1-1 and 1-2). The proposed project site encompasses an estimated 15.6-acre (6.3 hectare [ha]) parcel of land 400 feet (122 meters) southeast of Telegraph Road in the northeast quadrant of the DCEETA complex within the northeast quadrant of the DCEETA complex (Figure 1-1). In addition, the existing William Woods Road entry (front cover) would be widened, and portion of DCEETA's east perimeter road would be widened from one to two lanes. All three project elements to include site preparation and utility relocation would be conducted inside the DCEETA perimeter fence.

The purpose and need for the proposed action is to isolate operational support activities programmed for detecting potential terrorist and threats to Department of Defense (DoD) personnel. Explosives detection of incoming delivery vehicles, mail screening, and uncleared non-employee visitor processing would be conducted at the RDF. Antiterrorism/force protection (AT/FP) requirements mandated by DoD after September 11, 2001 (Unified Facilities Criteria [UFC] 4-010-01, July 31, 2002, *Minimum Antiterrorism Standards for Buildings*) stipulate that there must a minimum 1,312-foot (400 m) foot buffer between such screening facilities and those facilities occupied by personnel (Figure 1-3). The widening of the Perimeter Road and William Woods Road Gate is needed to accommodate the increase in traffic circulation into and inside the DCEETA complex once mail, fuel, and other delivery sorting and distribution functions are shifted to the new RDF, and to accommodate the circulation of larger trucks within the RDF.

In compliance with the National Environmental Policy Act (NEPA) of 1969, Fort Belvoir has prepared this environmental assessment (EA) to publicly document the environmental consequences of the proposed action. The EA has been prepared pursuant to the Council on Environmental Quality (CEQ) regulations in 40 Code of Federal Regulations (CFR) Part 1500-1508, AR 200-2 and 32 CFR Part 651.

1.1 Location and Background

Fort Belvoir is located in southeastern Fairfax County, Virginia, approximately 18 miles (29 km) southwest of Washington D.C. and 80 miles (129 km) north of Richmond, the capital of the Commonwealth of Virginia (Figure 1-1). Fort Belvoir consists of the 8,259-acre (3,345 ha) Main Post and the 807-acre (327 ha) Engineer Proving Ground (EPG). Fort Belvoir Main Post lies between Interstate-95 and Pohick Bay and Gunston Cove on Potomac River (Figure 1-2). US 1 divides the Main Post into two distinct geographical areas: North Post and South Post.

In recent years, Fort Belvoir has functioned primarily as an administrative and logistic support center for the Army and as a host for 107 hundred tenant organizations, such as DCEETA (US Army Garrison Fort Belvoir, 1993 and 2001a). Currently, about 24,414 civilian and military

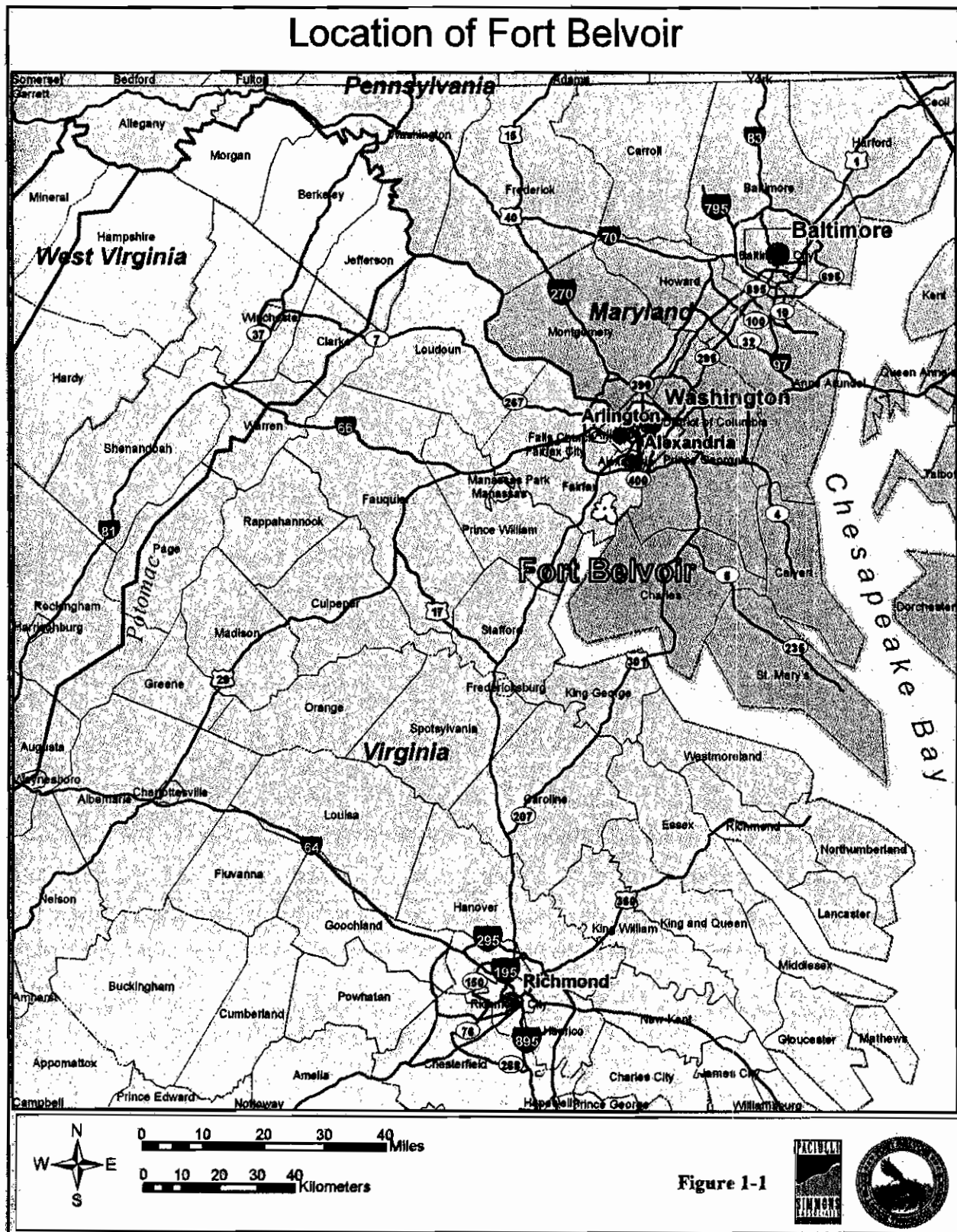
personnel work on Fort Belvoir, which provides support services for over 200,000 military personnel, dependents, and retirees in the region.

1.2 The NEPA Process

NEPA provides for the consideration of environmental issues in federal agency planning and decision-making. Under NEPA, federal agencies must prepare an environmental impact statement (EIS) or an EA for any federal action, except those actions that are determined to be "categorically excluded." An EIS is prepared for those federal actions that may significantly affect the quality of the human environment. An EA is a concise public document that provides sufficient evidence and analysis for determining whether or not to prepare an EIS. The EA includes brief discussion of:

- The need for the proposal.
- The alternatives (as required under Section 102 (2)(E) of NEPA).
- The environmental impacts of the proposed action and alternatives.
- A listing of agencies and persons consulted.

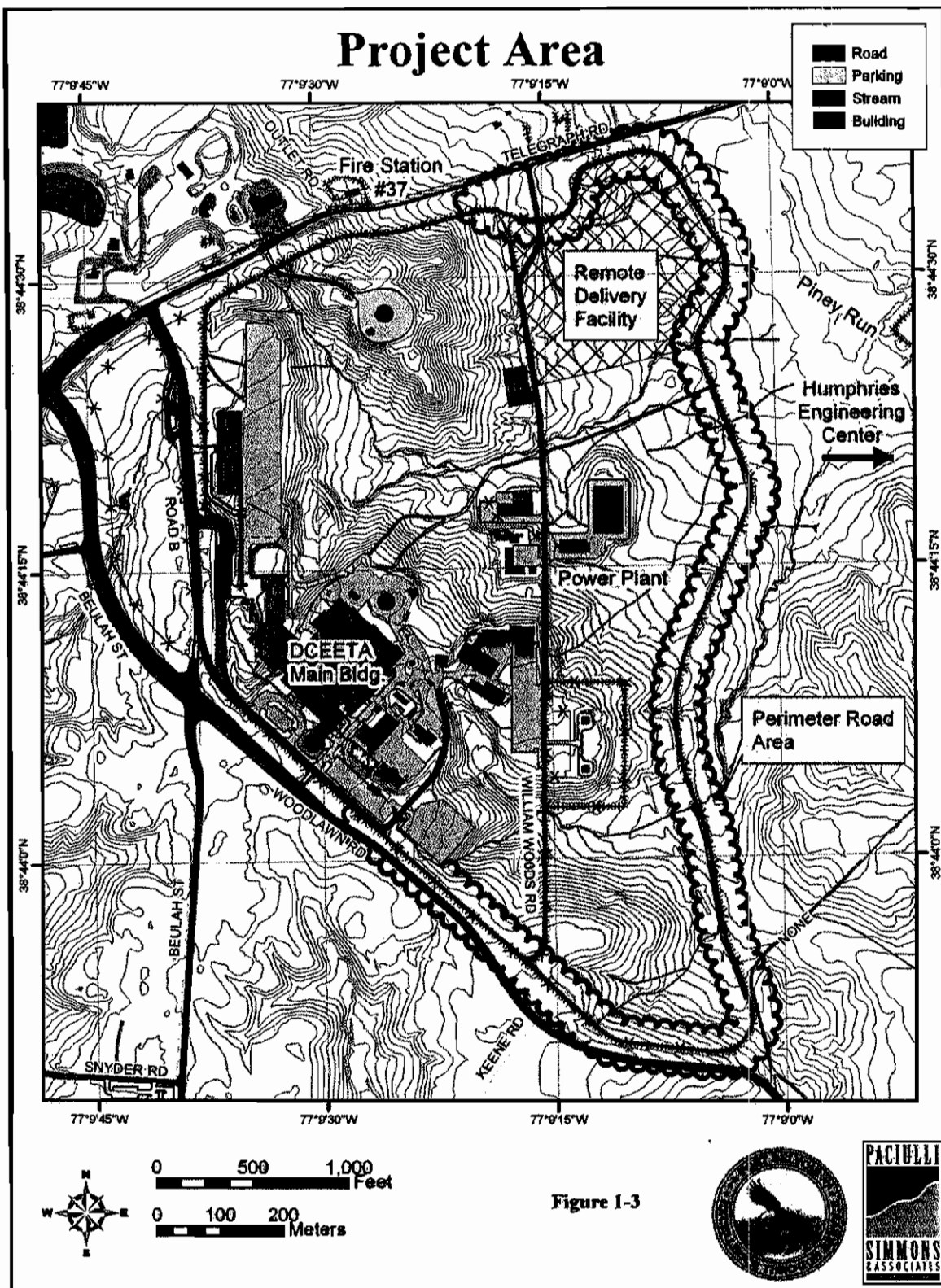
The EA results in either a Finding of No Significant Impact (FNSI) or a decision to prepare an EIS and a Notice of Intent (NOI). An evaluation of the environmental consequences of the proposed action and alternatives includes direct, indirect, and cumulative effects as defined at 40 CFR 1508.7 and 1508.8, as well as qualitative and quantitative (where possible) assessment of the level of significance of these effects. If Fort Belvoir determines that the proposed action may have a significant impact on the quality of the human environment, then an EIS will be prepared.



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2 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

CEQ's *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* establish a number of policies for federal agencies, including "...using the NEPA process to identify and assess the reasonable alternatives to the proposed action that will avoid or minimize adverse effects of these actions on the quality of the human environment" (40 CFR 1500.2 [e]). This chapter describes the alternatives to be considered by the decision maker to include:

- **Proposed Action Alternative**
- **Alternative Locations**
- **No Action Alternative**

2.1 Proposed Action Alternative

The US Army Defense Communications-Electronics Evaluation and Testing Activity (DCEETA) is proposing to:

1. Construct and operate a new entry point for delivery and visitor vehicles accessing the DCEETA complex from Telegraph Road, State Route 611. The entry point would provide access to the remote delivery facility (RDF).
2. Construct and operate the RDF, which would provide secure facilities for screening incoming mail, visitors, and delivery vehicles for explosives and infectious agents. The RDF would replace a temporary facility (metal-framed building) that DCEETA constructed on the 1.7-acre (0.69 ha) abandoned National Building Standards (NBS) laboratory site after September 11, 2001. After construction of the RDF is completed and operational, the NBS facilities would be removed, and the disturbed area regraded and replanted with native tree species.
3. Widen the perimeter road to facilitate internal distribution of mail and deliveries between the RDF and other parts of the DCEETA complex.

The Proposed Action Alternative is to locate the proposed facilities in the northeast quadrant of the DCEETA complex (Figure 1-3). The Army also evaluated the southeast quadrant as a potential location (Subchapter 2.2), and the No Action Alternative (Subchapter 2.3).

Non-employee visitors and delivery vehicles currently enter the DCEETA Main Gate at Road B (Figure 2-1). These vehicles, because they must undergo extensive inspection and screening before entering the DCEETA Complex, cause traffic queuing at the Main Gate during rush hour. These vehicles would be diverted to the William Woods Road Gate to access the new RDF. DCEETA personnel estimate that about 156-176 delivery and non-deliver vehicles per day that currently enter the Main Gate at Road B would be diverted to the William Woods Road Gate.

This figure includes about 10 fuel trucks per month, 25 non-fuel deliveries per day, and 146-176 business visitors per day.

DCEETA employees would continue to enter the DCEETA Main Gate at Road B (Figure 1-2) with no employees allowed to enter at the William Woods Road Gate. DCEETA employees who are local residents and generally turn right (eastbound) on Telegraph Road when leaving work, would be permitted to use the east perimeter road and exit by the William Woods gate (Bizzoco, 2005). This would relieve some traffic congestion at the existing Main Gate at Road B intersection during the afternoon rush hour.

The proposed action is a relocation, consolidation, and conversion of current functions within DCEETA. Personnel currently managing security, mail handling, and deliveries at DCEETA, who are presently operating from several overcrowded, temporary trailers near the Main Gate at Road B, would operate the new RDF. No new personnel would be required.

Figure 2-1 shows the existing conditions at the proposed site to include the abandoned NBS facility – a 1,800 sq. ft (167.4 m²) metal structure, an access road, and open ground. The entire NBS site occupies 1.7 acre (0.69 ha) with the remaining site acreage depicted as upland forest. The Proposed Action Alternative is shown in Figure 2-2.

2.1.1 Proposed Entry Point

The proposed entry point off Telegraph Road (William Woods Road Gate) is an existing gate that was closed after September 11, 2001. The Army would change the entry to provide better visibility to screen and maintain control of vehicles. The existing guard kiosk would be relocated south of the entry to the proposed secure area for the proposed RDF (Subchapter 2.1.2).

The entry off Telegraph Road would be designed to allow right-hand turning movements into and out of the RDF site. The Army would also construct a new 3,360 sq ft (312 m²) right turn queuing lane in the eastbound lane of Telegraph Road, to prevent traffic build up resulting from visitor and delivery vehicles entering the William Woods Road Gate. Vehicles would then be required to stop at the existing swing gate (front cover) and pop-up barriers before entering the entry screening area for the RDF.

Virginia Department of Transportation (VDOT) construction permit stipulates right turns only into and out of the facility from or onto Telegraph Road. Therefore no left-hand turns would be allowed into or out of the RDF site. Traffic needing to go west on Telegraph Road, such as to I-95 via Fairfax County Parkway (Route 1700), must turn right onto eastbound Telegraph Road, which is two-lane. This traffic would initially proceed east on Telegraph Road until they can safely turn around to travel west.

2.1.2 Proposed RDF

To comply with AT/FP requirements, the RDF would be divided into Secure and Non-secure Areas by two sets of fences and gates. A Personnel Intrusion Detection System (PIDS) fence would be added inside the existing perimeter fence to establish and separate these two areas. The

division would separate activities not requiring access to secure facilities (e.g., fuel delivery, visitor processing, etc.) from activities requiring access to secure facilities (distribution of mail and other deliveries).

□ Entry Screening Area

The Entry Screening Area would provide facilities for offloading gasoline and heating fuel, and for processing visitor and other delivery vehicles needing access to other portions of the RDF. The entry road would be extended south about 70 feet (21 m) beyond the existing swing gate, then west and south again about 75 feet (22.9 m), splitting into two lanes to form the Explosives Detection Area (EDA) Road (northern lane) and the Fuel Unloading Area Road (southern lane). Signage would direct both visitors and non-fuel delivery trucks destined for the Personnel Processing Area (PPA) and the Explosives Detection Area (EDA) via the EDA Road. Fuel delivery trucks destined for the Fuel Unloading Area would be directed to the southern lane. A small parking area would be constructed southeast of the EDA Road.

□ Personnel Intrusion Detection System (PIDS) Fence

The PIDS fence would connect DCEETA's north boundary with the east boundary fence (Figure 2-2). Entry Control Points (ECPs) to the Secure Area would be provided along the east and north perimeter roads and at the William Woods Road Gate. Each ECP would include an automatic gate, a hardened security guard kiosk, and a pop-up barrier. Constructing the PIDS fence would require clearing an estimated 1,980 feet (640 m) that is four feet in width.

□ Fuel Unloading Area

A Fuel Unloading Area would be constructed inside the Non-secure Area, west of William Woods Road and 130 feet (40 m) south of the William Woods Road Gate. The Fuel Unloading Area would allow use of common containment and other controls for both unloading delivered unleaded gasoline and No. 2 fuel oil, and refueling government vehicles by site personnel (Subchapter 3.4). The Fuel Unloading Area would include a fuel receiving station on the north side of the Fuel Unloading Road and a gasoline dispensing facility on the south side of the road. The new fuel unloading facility would replace the existing fuel unloading facilities located adjacent to the power plant area. There would be no increase in the amount of fuel unloaded or distributed on the complex – only the location of the unloading function would change.

Once operational, the largest fuel delivery truck to be accommodated at the Fuel Unloading Area would be a 7,500-gallon (28,386 liter) capacity vehicle. Both unleaded gasoline and fuel oil will be unloaded by gravity. Unleaded gasoline would go into a double-walled fiberglass 5,000-gallon (18,927 liter) underground storage tank (UST). Fuel oil would go to a 10,000-gallon (37,854 liter) double-walled transfer tank (Subchapter 4.4). Fuel oil would then be hydraulically transferred to the existing bulk fuel oil storage tanks, via a proposed buried pressurized, double-walled pipeline that would parallel the west shoulder of William Woods Road.

A high-level alarm at the unloading station would warn the pump house staff of unsafe conditions. During unloading, two staff members would be present (one at the pump house, and at the unloading station) to supervise unloading procedures. The station would comply with the

health and safety requirements of the Unified Facilities Criteria (UFC) 3-460-01 Petroleum Fuel Facilities.

❑ **Explosives Detection Area (EDA)**

DCEETA would construct the 660 sq ft (61 m²) covered inspection EDA inside the Non-secure Area. The EDA Road would have four queuing lanes and the capacity to provide for the inspection of non-fuel delivery vehicles that would travel to the Delivery Screening Area (DSA) and non-DCEETA employee visitors that would travel to Personnel Processing Area (PPA).

❑ **Personnel Processing Area (PPA) / Conference Center (CC)**

DCEETA would construct a 23,000 sq ft (2,137 m²) PPA/CC inside the Non-secure Area. It would provide administrative offices for Security and Protection Officers (SPO) and escorts, workstations, and conferencing facilities. DCEETA would locate centralized communications and local area network (LAN) facilities serving the entire RDF within the PPA/CC. The PPA/CC would have an 11,180 sq ft (1,039 m²) parking area with a 1,500 sq ft (140 m²) entrance, as well as walkways and landscaping.

❑ **Delivery Screening Area (DSA)**

DCEETA would construct a 9,665 sq ft (104 m²) delivery screening building inside the Non-secure Area. The rear loading dock of the building would be within the secure area, separated from the other non-secure portion of the building. The building would act as a gateway or passageway for all incoming material to include mail to pass from Non-secure to Secure areas and eventually to the main DCEETA complex.

❑ **Shipping / Receiving Warehouse and adjoining Controlled Covered Passageway**

DCEETA would construct a 47,700 sq ft (4,436 m²) warehouse for material storage, to include hazardous material, within the Secure Area. Once constructed, the warehouse would be connected to the DSA by a 50-foot (15-m) long Controlled Covered Passageway (Figure 3-2). The warehouse would also have a loading/unloading area and adjacent parking. Prior to warehouse construction, DCEETA vehicles would pick up deliveries and mail from the rear loading dock of the DSA for delivery. Once constructed, internal distribution would switch from the rear loading dock to the controlled covered passageway and warehouse.

❑ **Widening of the Perimeter Road within the Proposed RDF**

The Army proposes to widen the existing perimeter road on the DCEETA complex to improve internal traffic circulation and to facilitate distribution of deliveries between the new RDF and other elements of DCEETA (Subchapter 2.1.3). A 940-foot (287 m) section of that roadway lies within the proposed RDF site and would be constructed at the same time as the RDF facilities. The existing paved roadway with 3-foot (0.915 m) gravel shoulders would be widened from one lane 8 feet (2.44 m) in width to two 12-foot (3.66 m) paved with three-foot (0.915 m) shoulders, a total width of 30 feet (9.15 m).

❑ **Roadways, Walkways and Parking Areas**

A series of roadways and pedestrian walkways, totaling 4.26 acres (1.72 ha), would connect the above facilities to each other and to the existing perimeter road (Figure 2-2). A patrol road would

be constructed within the Secure Area adjacent to PIDS fencing. One section of the road would connect to the north perimeter road at a point just west of the new entry screening area. The other section would connect the DSA to a point on the east perimeter road southeast of the PPA/CC. Guards would use the patrol road to monitor activity within the Non-secure Area such as fuel unloading, vehicle movement along EDA Road and non-employee visitors at the PPA/CC. The patrol road would also allow DCEETA employees to continue to use the east perimeter road for walking and jogging, allowing employees to bypass the new entry screening area and fuel unloading area.

Paved parking areas would be located adjacent to each facility described above. The parking would accommodate 71 vehicles, or 14,850 sq ft (1,380 m²).

□ Relocation of Utility Ducts

Electrical power to the site would be obtained from an existing 5 kV circuit, which would be distributed via a concrete-encased electrical duct bank to the RDF site. A single overhead electrical line currently crosses the William Woods Road to an existing underground duct bank. Surface manholes and the duct bank are adjacent to the abandoned NBS site (Figure 2-1). The new duct bank would carry electrical lines between two existing on-site electrical substations, enabling either substation, as a back-up, to provide electrical power to the service area (US Army Garrison Belvoir, 2002c). Excavation to install utility lines would be limited to the buried utility trenches with a maximum width of three feet (0.915 m) for pipelines; 18 feet (5.5 m) for duct banks; and four feet (1.22 m) for building connections.

Telecommunications, both voice and data, for the RDF site would be provided as two systems, secure and non secure. These would be located with electrical systems in the underground conduits and manholes along the access road to the former NBS site. A fiber optic communication line and a conventional (copper) telephone line, connected to existing communication lines, would monitor and control the connection between the two substations (US Army Garrison Fort Belvoir, 2002c).

2.1.3 Widening the Perimeter Road

Approximately 1.42 mi (2.3 km) of DCEETA's east perimeter road, outside the limits of the proposed RDF, would be widened from 8 feet (2.44 m) to 30 feet (7.32 m). The existing paved roadway with 3-foot (0.915 m) gravel shoulders would be widened from one lane 8 feet (2.44 m) in width to two 12-foot (3.66 m) paved with three-foot (0.915 m) shoulders, a total width of 30 feet (9.15 m).

2.1.4 General

□ Site Preparation

Site preparation of the RDF would include clearing and grading of approximately 15.6 acres (6.3 ha) of the RDF. 4.57 acres (1.85 ha) of which would be covered by structures, sidewalks, parking lots and paved roads. The remaining 11.03 acres (4.47 ha) would be landscaped area that will be replanted and reseeded.

Site preparation for the proposed perimeter road widening would require 7.6 acres (3.08 ha) to be cleared and graded. An additional 10 to 15 feet (3.05 to 4.6 m) along the west side of the roadway will be temporarily impacted to provide staging and machinery access. This additional 2.58 acres (1.03 ha) of land would be reseeded and replanted with native tree species after construction completion.

□ Relocation / Demolition Operations

In late 2001, DCEETA constructed a temporary, metal-framed modular building on the site of the abandoned NBS building to serve as a remote mail screening facility (Figure 2-1). DCEETA proposes to retain the modular building as a temporary mail delivery-screening site until the DSA is completed as part of the first phase of the Proposed Action Alternative. Once the screening function is transferred to DSA, DCEETA would dismantle the modular building and regrade and replant the 1.7 acres (0.69 ha) with native trees and shrubs.

The existing gasoline dispensing facility, located at the power plant, would be decommissioned and removed, once the fuel receiving station is in operation (Subchapter 3.4). A number of minor structures at the current William Woods Road Gate Entry Control Point (e.g., light poles, swing gates, signs, bollards, concrete building pad, guard house, corrugated metal drain pipes, etc.) would be reused onsite.

There are no immediate plans for disposal of other facilities where DCEETA personnel managed mail and fuel delivery and distribution functions before September 11, 2001. These personnel worked from several locations on the main part of the DCEETA complex, including several overcrowded trailers near the Main Gate at Road B. It is likely that these facilities would ultimately be used for other purposes. The Army will ensure that proper NEPA documentation will be prepared for any reuse or disposal.

2.1.5 Proposed Construction Schedule

Phase I would include construction of the entry point (to facilitate construction access) and relocation of the existing guard kiosk, the PIDS fence, the entry screening area including the Fuel Unloading Area, the EDA, the PPA/CC, the DSA, utility easements, and the patrol roadways, walkways and parking areas. Phase II would include construction of the Shipping / Receiving Warehouse with adjoining Controlled Covered Passageway, widening of the east perimeter road and relocation of personnel operations. Phase III would include removal of the existing temporary mail screening facility at the abandoned NBS site and construction of the future expansion of the warehouse and the PPA/CC.

Construction would require a number of workers, depending on the stage of the project, with an estimated maximum of 70 workers during the most intensive activity (site preparation for roads and buildings). Construction would occur over a 12 to 15-month period beginning in 2005. Construction would begin in the proposed entry area located between the North perimeter fence and Telegraph Road (Subchapter 2.1.1). The contractor would perform the following: clear, grub, and grade within the proposed construction area; modify/add to the existing underground utilities and duct banks; construct/modify/expand roadways; construct parking lots and storm

water control measures; construct building pads, fencing, lighting, and the PIDS; and construct the fuel delivery facility.

Construction of structures would begin about one month after site preparation begins, as the roadways and building pads are ready, and would end about one month after site preparation is completed. Contractors would make the final connections of electrical, communications, and security systems to the duct banks as the buildings are completed. Phased turnover of the completed buildings would allow each building to be turned over to the government separately.

There would be one to two months for follow-up and “fit out,” and for employee relocation from existing workspace. The entire process would likely be completed during the third quarter of 2006.

2.2 Alternative Locations for the RDF

Because of its classified mission, DCEETA’s remote delivery screening function requires collocation of the RDF with other DCEETA facilities. Only those alternative sites within the existing DCEETA complex were considered reasonable. Potential sites outside DCEETA’s perimeter were not considered viable.

The evaluation balanced the most advantageous configuration for the proposed RDF, which was a site adjacent to a major public thoroughfare but still in compliance with Antiterrorism/Force Protection (AT/FP) requirements (Subchapter 4.11), with environmental considerations. The reasonableness of other sites within the DCEETA Complex are influenced primarily by:

- Availability of adequate acreage to accommodate the facilities and required separations, which consists of 7 acres (2.8 ha) of open space for RDF development.
- A minimal 1,312-foot (400 m) separation between the RDF and DCEETA’s workforce.

Secondary factors, which would provide advantages in terms of operation of the site, include:

- Proximity to a public roadway, such as Telegraph Road, which greatly enhances logistical management of fuel and other deliveries.
- Limited employee disruption.

The main DCEETA complex area lacks sufficient space to accommodate the new facilities and still maintain AT/FP requirements. Available space for the proposed development on the DCEETA complex is limited to northeast and southeast quadrants. DCEETA has proceeded with planning and design for the proposed development in the northeast quadrant. They concluded that the southeast quadrant is not viable, because the fuel delivery road and explosives detection road needed to service the southeast quadrant would pass within 1,312 feet (400 m) of the main DCEETA complex. 400 meters (1,312 feet) is the minimum security offset distance to primary facilities under current AT/FP standards. Therefore, this alternative was eliminated. In addition, the southeast quadrant alternative would present other disadvantages:

- Construction of the RDF in the southeast quadrant required additional infrastructure such as utility lines and roadway crossings.
- Delivery trucks would travel 1.5 miles (2.4 km) into the complex would require additional clearing and loss of vegetative cover.
- The development in the southeast quadrant would have similar or greater impacts on natural resources, as follows:
 1. Both areas are heavily wooded and contain steep topography, streams and stream valleys, Chesapeake Bay Preservation Areas, and other natural resources (Chapter 4).
 2. Locating the RDF in the southeast quadrant would require extending the Fuel Unloading Area Road, Explosives Detection Area (EDA) Road, and the patrol roads another 3,200 feet (976 m) from Telegraph Road, contributing to a greater increase in storm water runoff from the additional increase in impermeable surface that would be required.
 3. Extending the fuel delivery road would also require crossing another perennial stream (North Creek) with its adjacent wetlands and Chesapeake Bay Resource Protection Area (Subchapter 3.2.3.4).
 4. Constructing in the southeast quadrant would impact more mature forest than in the northeast quadrant. Also, past use by the NBS has already introduced impacts in the northeast quadrant.
 5. The slopes are steeper in the southeast quadrant.
 6. Two high priority Partners-in-Flight (PIF) breeding species, the Wood Thrush and Scarlet Tanager have been documented within the southeast quadrant of DCEETA. In addition, four bird species that are on the Virginia's Rare Bird list use habitat less than 900 feet (275 m) east of the southeast perimeter fence (Subchapter 3.2.4). The Proposed Action Alternative located 2,200 feet (671 m) north of these breeding areas would have minimal impact on these species.

2.3 Alternative Site Design

The original plan for the DCEETA RDF site has been reconfigured to reduce impacts to environmental sensitive areas, such as Chesapeake Bay Preservation Areas and wetlands. Figure 2-2 shows the reconfigured plan and Chapter 4 provides detail on the potential impacts of design alternatives.

2.4 Widening of the Perimeter Road

The Proposed Action Alternative includes widening of 1.42 miles (2.3 km) of the east perimeter road on its inside curve, towards the main DCEETA facilities and away from the existing perimeter fence (Figure 2-3). Alternatively, the outside curve of the east perimeter road could be widened with the perimeter fence relocated to accommodate the widening. However, this proposed action would impact the wetland that borders 800 feet (244 m) of the DCEETA

complex. These wetlands are associated with the Piney Run Branch of Dogue Creek (Subchapter 3.2.3.3).

2.5 No Action Alternative

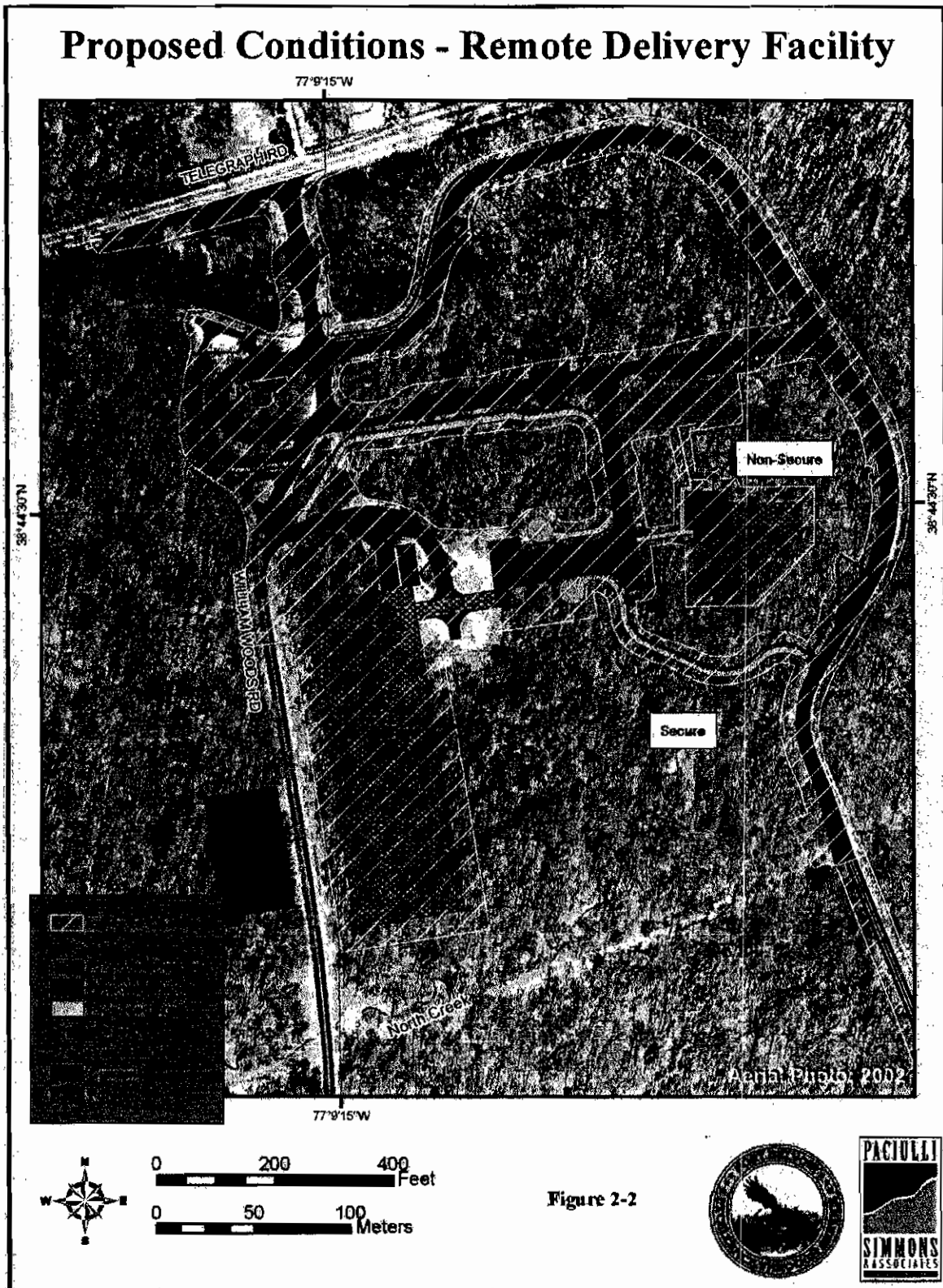
Under the No Action Alternative, the Army would not construct the RDF or widen the east perimeter road and the William Woods Road Gate. Non employee and delivery trucks would continue to be inspected at DCEETA's Main Gate at Road B (Figure 1-3). The east perimeter road would remain an 8-foot (2.44 m) wide single-lane road.

This alternative is not considered reasonable to resolve the deficiency in force protection safety requirements for mail and other deliveries and for visitor processing at the DCEETA complex. The No Action Alternative is, however, presented in this EA as a baseline condition compared to impacts of the proposed action.

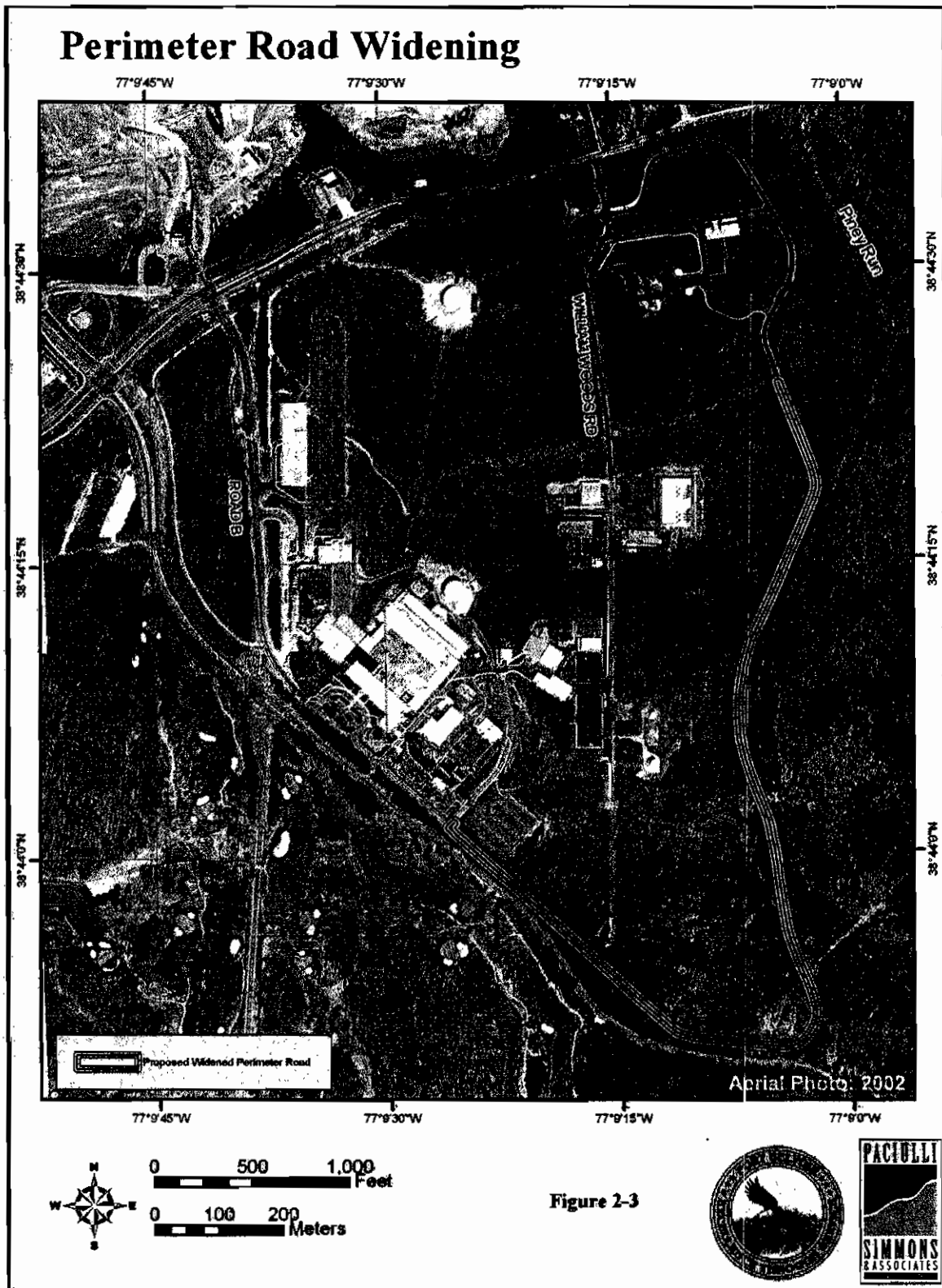
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3 AFFECTED ENVIRONMENT

The CEQ regulations implementing NEPA (40 CFR Part 1500) require documentation succinctly describing the environment of the area(s) to be affected by the alternatives under consideration, as well as a discussion of the impacts in proportion to their significance. The affected environment under the Proposed Action Alternative ranges from site-specific physical, natural and cultural resources to broader regional concerns (i.e. air quality variables, noise, infrastructure, socioeconomic conditions, community facilities and services, transportation and traffic).

3.1 Land Use, Plans, Aesthetics and Coastal Zone Management

3.1.1 Land Use

Local land uses outside of Fort Belvoir are predominantly residential, although commercial and industrial development, such as the Lorton Valley Industrial Park and a number of retail malls occur along Richmond Highway (US 1) and near Interstate 95 (I-95). Locally there are a number of sizable tracts in public ownership, including Huntley Meadows Park, Pohick Bay Regional Park, Mason Neck State Park, the Washington Grist Mill Park, Mount Vernon Estate and Parkway, Gunston Hall Plantation, Woodlawn Plantation, Potomac River National Wildlife Refuge and Mason Neck National Wildlife Refuge. Many of these tracts occur along the Potomac River, resulting in a continuous band of natural habitat along the river.

Overall land use at the Main Post includes: 1,838 acres (744 hectares [ha]) for Training Ranges; 1,102 acres (446 ha) for Administrative/Education; 1,006 acres (407 ha) for Recreation; 641 acres (259 ha) for Troop and Family Housing; 451 acres (183 ha) for Community Facilities; 388 acres (157 ha) for the Airfield; 340 acres (138 ha) for Research and Development; 314 acres (128 ha) for Service and Storage; 129 acres (52 ha) for Industrial; 103 acres (42 ha) for Medical Services; and 3,335 acres (1,350 ha) of environmentally sensitive areas. These categories may change because the *Real Property Master Plan – Long Range Component (RPMP-LRC)* is undergoing revision. The environmentally sensitive classification includes considerable areas of wetlands, forest, and riparian forest, much of which have been preserved as wildlife corridors and refuges.

Using natural and constructed boundaries, such as Accotink Bay and US 1, the existing *RPMP-LRC* divides Fort Belvoir into six planning districts of major land areas: Upper and Lower North Post, Davison Army Airfield, South Post, South Post Core, and Southwest Area (US Army Garrison Fort Belvoir, May 1993, as cited in: US Army Garrison Fort Belvoir, July 2002). The Proposed Action would occur within the DCEETA Complex, located within the Upper North Post Planning District. The Upper and Lower North Post Planning districts accommodate troop and family housing, support facilities, and large tenant organizations, such as DLA and DCEETA. These two planning districts encompass several community activities, such as the North Post Golf Course, the Fort Belvoir Elementary School, the commissary, Post Exchange,

two child development centers and several recreation facilities for military personnel and their family.

New development in this planning district is for research and development or tenant administration functions, such as DoD headquarters facilities and regional functions. To preserve sensitive areas and significant amounts of open space, lot coverage is limited to less than 20 percent developed because of the substantial amount of land set aside for the Forest and Wildlife Corridor (FWC), wetlands, and stream valleys.

The 280-acre (113 ha) area in the Upper North Post that is occupied by DCEETA is the largest area on Fort Belvoir designated as research. Over the years, the proposed project site had been used as a maneuver course for Army training, and more recently, as a temporary location for the National Bureau of Standards (NBS) before being acquired by DCEETA (Figure 2-1). The site, at the time of initial acquisition by the Army during World War I, was open farmland, which has undergone natural reforestation with second stage succession hardwood growth.

3.1.2 Plans

Fort Belvoir is updating the *RPMP-LRC*, and is preparing an environmental impact statement to address three master plan alternatives (US Army Garrison Fort Belvoir Website, February 2005). All three alternatives would designate the area of the Remote Delivery Facility as Administrative/Operations/Classroom Schools. Ft Belvoir's Chesapeake Bay Resource Protection Areas (RPAs) are considered as environmentally sensitive areas (Subchapter 3.2.3.4) that may be constrained by construction and are compatible only with very low-density or no development (US Army Garrison Fort Belvoir, 2001). Severely constrained areas are those areas that have the greatest degree of limitation.

Fairfax County, including Ft. Belvoir, is in the National Capital Region and, thus, the National Capital Planning Commission (NCPC) – the central planning agency for the federal government in the National Capital Region – reviews new development at Fort Belvoir. The NCPC adopted a new *Comprehensive Plan for the National Capital: Federal Elements* on August 5, 2004, which establishes regional goals and planning policies for growth and development, that federal agencies should comply with to the extent possible.

One element of the Comprehensive Plan, *Federal Workplace: Location, Impact, and the Community*, lists policies with regards to building and development codes, energy efficiency, working environment, and physical security. Because the Proposed Action Alternative would have no change in personnel, and because Ft. Belvoir is not in the urban core (downtown), only the following policies apply:

- Use innovative energy conserving techniques (e.g., LEED) in the design and construction, operation, location, and orientation of federal workplaces (Section 4.1.1 and Chapter 7).

- Design security barriers and checkpoints at vehicular entry points on federal installations to accommodate vehicular queuing on site, and to avoid adverse effects on adjacent public roadways operations and safety.

A second element of the NCPC Comprehensive Plan, *Transportation*, lists federal parking policies and associated parking ratios in response to the areas congestion and poor air quality (Subchapter 3.5.1). Ft Belvoir is beyond reach of the regional transit system and is not served by High Occupancy Vehicle (HOV) lanes. Therefore, the base-parking ratio of one space for every 1.5 employees (1:1.5) applies to any new construction at Fort Belvoir.

A third element of the NCPC Comprehensive Plan, *Parks and Open Space*, lists a policy of conserving portions of military reservations that add significantly to the inventory of park, open space, and natural areas and should, to the extent possible, be used by the public for recreation. Fort Belvoir is listed in the Comprehensive Plan as an example of such conservative areas (NCPC, 2004).

Road closures and disruption of pre-September 11th traffic patterns to provide Department of Defense facilities increased security would continue into the foreseeable future. Richmond Highway-Telegraph Connector, which is a north-south bypass connecting US 1 with Telegraph Road via Old Mill Road, is in the preliminary stages of design. The Federal Highway Administration, Eastern Federal Lands Highway Division is conducting an Environmental Assessment to determine the best routing. The by-pass would be an open, divided public highway with no access control points within Fort Belvoir property. The routes proposed construction would be similar to the existing Fairfax County Parkway located 2.0 miles (1.24 km) to the west. One of the proposed corridors for the Richmond-Telegraph Road Connector (Corridor C) is located 1,200 feet (366 m) east of the proposed RDF site (Figure 1-3). The route would be located between DCEETA's east perimeter fence and the Humphries Engineering Center (FHWA, 2005).

The Beulah Street entrance off Telegraph Road was a major access point for Fort Belvoir until September 11, 2001. Since that time, it has been closed to all non-DoD traffic. A 1,100-foot (336 m) section of Beulah Street is proposed to be relocated 275 feet (84 m) to the southwest of the existing Woodlawn Road intersection in order to comply with a Department of Defense (DoD) Force Protection requirement to maintain a required standoff distance of 1,312 feet (400 m) between roadways and DoD facilities.

3.1.3 Aesthetics

Visual aesthetic qualities associated with Fort Belvoir are attributable to its diverse terrain, unique natural resources and historic structures. Motorists who travel on Telegraph Road that parallels the DCEETA north perimeter fence have an attractive view dominated by hardwood forest. Single-family residences and the Hilltop Golf Course form the north boundary of the

portion of Telegraph Road between the Fairfax County Fire Station #37 and entrance to the Army Corps of Engineers, Humphries Engineering Center (Figure 1-3).

3.1.4 Coastal Zone Management (CZM)

The Coastal Zone Management Act (CZMA) of 1972 (16 USC § 1451, et seq., as amended) provides assistance to states, in cooperation with federal and local agencies, for developing land and water use programs in coastal zones. Section 307(c)(1) of the Coastal Zone Management Act Reauthorization Amendment (CZMARA) stipulates that federal projects that affect land uses, water uses, or coastal resources of a state's coastal zone must be consistent to the maximum extent practicable with the enforceable policies of that state's federally-approved coastal management plan. The Commonwealth of Virginia has developed and implemented a federally approved Coastal Resources Management Program (CRMP) with enforceable policies based on nine regulatory programs governing use of natural resources within coastal (and sometimes inland) areas. Programs relevant to the proposed action include: encroachments on wetlands, land-disturbing activities needing erosion and sediment control and land-disturbing activities needing point source pollution control (Virginia Pollutant Discharge Elimination [VPDES] Permits), coastal land management; and air pollution control (Chapter 6 – Appendix A).

3.2 Natural Resources

Fort Belvoir is located in the Washington D.C. Metropolitan area, which is an area that is rapidly changing from undeveloped natural areas to developed land uses. In this urbanized area, Fort Belvoir represents a significant tract of native vegetation, in terms of size, diversity and proximity to other large undisturbed tracts such as Pohick Bay Regional Park, Huntley Meadows Park and Mason Neck National Wildlife Refuge. To preserve its ecological significance, Fort Belvoir actively manages and conserves natural resources within its boundaries.

3.2.1 Physiography

Fairfax County is divided into two Physiographic provinces: the Coastal Plain and the Piedmont Plateau. These two provinces are subdivided into five sections in Fairfax County from west to east: the Piedmont Upland, the Piedmont Lowland, and high Coastal Plain Terraces, the high Coastal Plain, and the low Coastal Plain Terraces (Hobson, 1996). Most of Fort Belvoir lies in the high and low Coastal Plain Terraces of the Coastal Plain Physiographic Province.

The Fall Line, which forms the northeast-southwest boundary between the resistant, metamorphic rocks of the Piedmont Plateau on the west and the softer, sedimentary rocks of the Coastal Plain Province, is located in the vicinity of I-95 (Terwilliger, 1991). Regional configurations of major fault systems, as well as deflections of the Potomac River along the Fall Line, suggest tectonic influence. However, no evidence of recent structural disturbance exists in the Fort Belvoir area (BRAC EIS, 1991; USGS, 1985 as cited in US Army Garrison Fort Belvoir, 1998a).

3.2.1.1 Geology

There are several geologic formations associated with the Coastal Plain Physiographic Province including the Potomac Formation, Bacon's Castle Formation, Shirley Formation, and Tertiary Alluvium. The major geologic unit in the Fort Belvoir area is the Potomac Formation, a seaward-thickening wedge of interlayered unconsolidated sediments such as sand, silt and clay, that has a moderate eastward dip (Larson and Froelich, 1977, as cited in: US Army Garrison Fort Belvoir, 1993).

The Potomac Formation is characterized by lens-shaped (lenticular) deposits of interbedded sand, silt, clay and gravel underlain by residual soil and weathered crystalline rocks (Larson and Froelich, 1977, as cited in: US Army Garrison Fort Belvoir, 1993). The sand and clay lenses of the Middle and Lower Potomac Formation outcrops occur along the steep-sided slopes of ravines leading down to the Potomac River shoreline in the Main Post area. In this area, the Potomac Formation is comprised of greater than 80 percent clay, and is 36 to 98 feet (11 to 30 m) thick. It is primarily found along slopes (USGS, 1985, as cited in US Army Garrison Fort Belvoir, 1998a). At the project area, thin deposits of Tertiary alluvium and terrace deposits rest on sand and clay lenses of the Middle and Lower Potomac, and depth to bedrock is greater than 60 inches (152 cm).

Coastal Plain deposits consist of unconsolidated sediments that were deposited during successive periods of building and receding shorelines. The sedimentary formations have a gradual eastward dip and are exposed at the surface along outcrops, such as along the Pohick Creek and in the Alexandria-Fredericksburg (Amtrak-VRE) railroad cut in Lorton.

3.2.1.2 Geomorphology

The land features on Fort Belvoir have been influenced by the effects of fluvial dissection by rivers and streams. Surface features range from smooth uplands to bluffs and V-shaped stream valleys (ravines) that rise abruptly from floodplains to lowlands and valley bottoms that are underlain with alluvium. Fort Belvoir is located in a zone of physiographic transition between well-to-moderately well-drained uplands and poorly drained lowlands. The dominant geomorphic process in the project area is active riverine erosion in steeply sloping valleys that are characterized by gravitational mass wasting, which includes downhill creep, landslides, slumping and rockfalls. This condition increases the rate of erosion and the probability of creep and slumping (excerpted from information in the Fort Belvoir files).

3.2.1.3 Topography

The major terrain formation in the vicinity of the proposed site is a nearly level northwest-southeast trending plateau that transitions to the South Post of Fort Belvoir, which slopes steeply to lowlands that are associated with the floodplains of the Accotink, Dogue, and Pohick Creeks

(USGS, 1983). Steep-sided ravines occur on the east and west sides of the plateau, which give rise to numerous upland tributaries. Uplands and plateaus make up about 40 percent of the land area in the North Post of Fort Belvoir, while lowlands make up another 40 percent, and steep slopes make up the remaining 20 percent.

Topography in the proposed development area is quite varied, with a linear 230-foot (70 m) high hilltop plateau located west of William Woods Road, which drains into three narrow, winding, steep-sided stream valleys. The median elevation for the RDF is 120 to 130 feet (36.6 to 40 m) mean sea level (MSL). Elevations in the RDF area range from 68 feet (21 m) to 134 feet (41 m) MSL with approximately 2/3rds of the site having greater than 7 percent slope. The remaining third has slopes 4 to 7 percent with small-localized areas having a less than 4 percent slope.

3.2.1.4 Soils

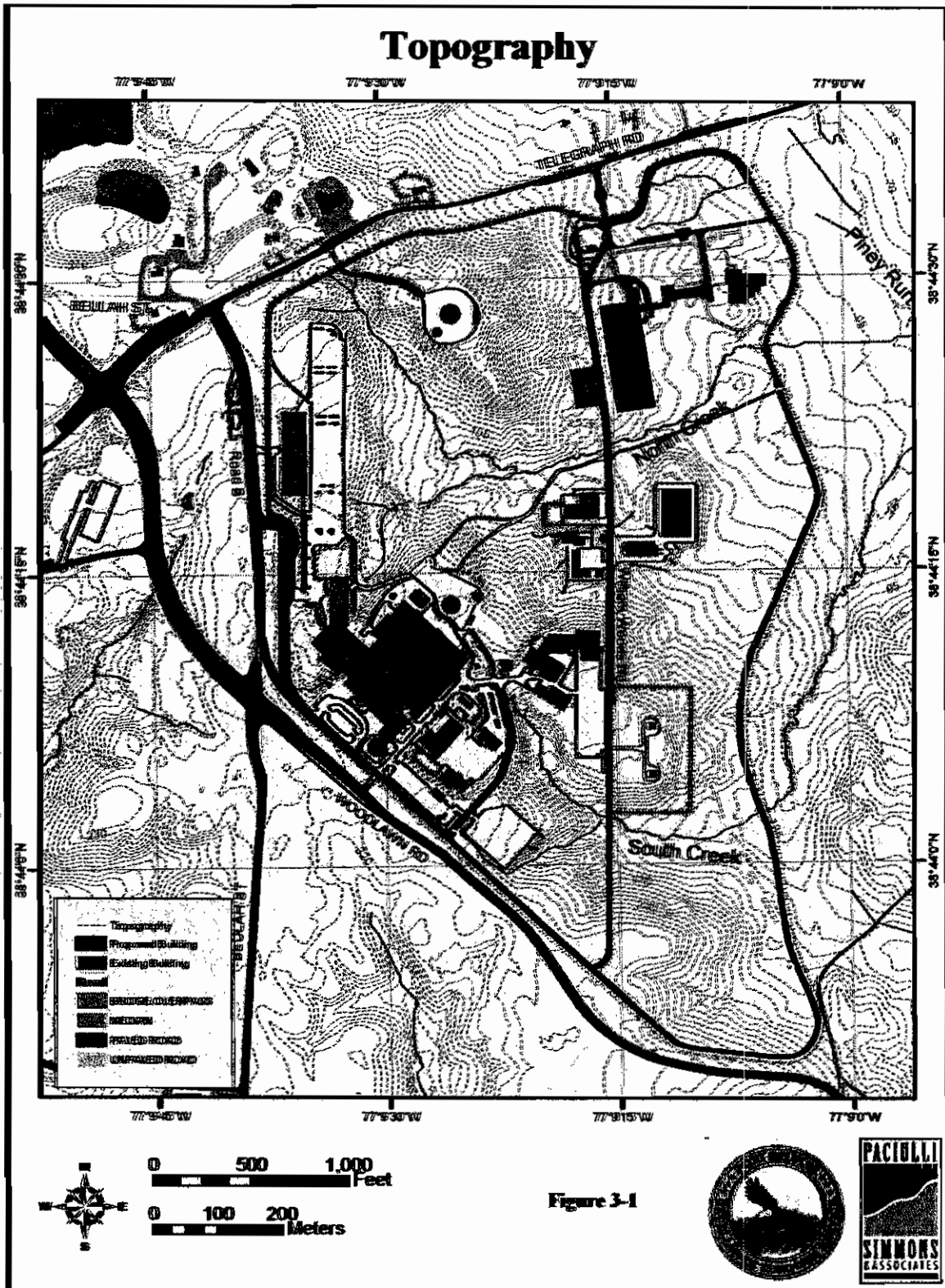
The Natural Resources Conservation Service (NRCS) - formerly the Soil Conservation Service, or SCS) - surveyed the Fort Belvoir soils in 1982 (USDA SCS, 1982). The SCS soil survey described and delineated 19 soil series on Fort Belvoir. In addition to the 19 named soil series, there are areas of mixed alluvium (Entisols) and tidal marsh (Histosols) that are not sufficiently defined to be classified as a series. The survey data were incorporated into the Fort Belvoir Geographic Information System (GIS). Of the area included in the survey, 1,898 acres (768 ha) are described as urban built-up and 587 acres (238 ha) are described as non-series units of cut and fill (US Army Garrison Fort Belvoir, 2001b).

Soils associations within the project area consist of two types: Dragston fine sandy loam (47A) with up to 20 percent inclusions of Mattapex silt loam (46C); and Lunt silt loam (49B) with up to 20 percent inclusions of Keyport silt loam (51A). Other soil types that occur adjacent to the proposed project are Dumfries sandy loam (61C) and Lenoir silt loam (85A), which is designated as a hydric soil.

Dragston soils occur on broad coastal plain upland terraces between drainageways and along edges of upland swamps where slopes are 6 to 10 percent. These soils exhibit moderately rapid permeability with slow surface runoff with a slight erosion hazard. Dragston soils tend to occur in shallow, poorly drained depressions particularly where the seasonal high water table is near the surface.

Mattapex soils occupy slightly higher areas throughout the proposed area than Dragston soils and are well to moderately-well drained. These soils exhibit moderate to rapid permeability with medium surface runoff and a moderate erosion hazard.

Near the William Woods Road entrance, the predominate soil type is Lunt silt loam, which occurs on narrow to medium wide ridges where slopes are 7 to 15 percent. This soil is well-drained to moderately well-drained. Keyport soils occur in topographically lower positions and



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tend to be wetter than Lunt soils. Surface runoff is medium with a moderate to severe erosion hazard.

Dumfries sandy loam occurs along isolated side slopes adjacent to drainageways near the southeast portion of the proposed RDF site where the slopes are 7 to 15 percent. On occasion this soil type has small inclusions of well-drained Lunt soils, which occupy shallow depressions that are scattered throughout the map unit. This well-drained soil series exhibits moderate to rapid permeability with medium surface runoff and a moderate erosion hazard.

Lenoir silt loam soils occur in poorly-drained, nearly level conditions within narrow flat areas that occur on coastal plain uplands and narrow areas that parallel perennial streambeds, such as along North Creek (Figure 3-1). The soil has slow permeability, making surface runoff slow and a slight erosion hazard. The soil has an extremely high water table with water on the surface during the wet season. The soil is soft when wet, thus limiting the soil for building sites. Localized occurrences of Lenoir soils are present within the narrow flat areas, which broaden at the stream crossings. This soil series is associated with Keyport, Dragston and Beltsville soils, which occupy shallow depressions.

3.2.2 Water Resources

3.2.2.1 Groundwater

Fairfax County is underlain by three main groundwater aquifers: Bacon's Castle Formation (not present at Fort Belvoir) and the Lower and Middle Potomac Formation. Potable water below Fort Belvoir is found predominantly in the Lower Potomac and is recharged by vertical movement from overlying, water-bearing sand bodies. This aquifer, as well as the Middle Potomac, is represented by a thick zone of interbedded layers of fine to coarse poorly sorted sands that are separated by less permeable confining clay wedges (US Army Garrison Fort Belvoir, 2001b). Groundwater flow in this aquifer is towards the southeast (US Army Garrison Fort Belvoir, 2001d) and is recharged by precipitation in the north and west sections of the North Post of Fort Belvoir (Grogan and Widdowson, 1998). The aquifer's flows are localized, originating from various recharges on the installation and draining to nearby streams, creeks, and large surface water bodies (US Army Garrison Fort Belvoir, 2001b).

The water table depths on Fort Belvoir are 70 to 225 feet (21 to 69 m) MSL with the variation of surface elevations influencing the thickness. The water table may occur at or near surface level at locations adjacent to streams. This suggests that shallow groundwater flow relates to surface drainage features (US Army Garrison Fort Belvoir, 2001b). Locally perched water tables may fluctuate between 10 to 35 feet (3 to 11 m) below the ground surface based on precipitation, leakage, and evapotranspiration. However, in some areas, fine-grained low-permeability sediments create isolated local or regional confining layers, which may restrict vertical groundwater movement.

Groundwater in the Potomac Formation is soft sodium bicarbonate water with water quality depending on the extent of mixing with salt water. Water wells on Fort Belvoir deliver up to 250 gallons (950 liters) per minute. Well water, although potable, is used only for irrigation (BRAC EIS, 1991). There are no groundwater wells in the vicinity of the project site (Fairfax County Website, 2005).

3.2.2.2 Surface Water

Fort Belvoir is located within the Potomac River watershed - the second largest tributary of the Chesapeake Bay - and in the lower reaches of three major Potomac River tributaries: Accotink Creek, Dogue Creek, and Pohick Creek. Many smaller tributaries are intermittent over much of their length, having small watersheds confined to the installation. An estimated 10,000 tons (10.2 metric tons) of silt are contributed to the Potomac River annually in the surface water runoff of these three tributaries (BRAC EIS, 1991).

The project area lies west of Piney Run (Figure 3-1), which is part of the Dogue Creek watershed. Piney Run flows south across Telegraph Road through Fort Belvoir's North Post District and finally empties into Dogue Creek and the Jackson Miles Abbott Wetland Refuge, located 1.1 miles (1.8 km) southeast of the project area. Six unnamed first order and second order tributaries of Dogue Creek, which drain east off the DCEETA complex, are the only surface water features in the vicinity of the proposed project area. These streams exhibit 'bed and bank' morphology and are associated with narrow wetland occurrences. Existing topography controls the flow of runoff with poor drainage during high water table conditions.

3.2.3 Environmentally Sensitive Areas

Department of Defense (DoD) installations protect significant natural resources by designating them as special natural areas or "environmentally sensitive areas." Such a designation allows an installation to focus its management on conservation, and to make resource access and use decisions accordingly. According to the Integrated Natural Resources Management Plan (INRMP), environmentally sensitive areas on Fort Belvoir include forest and wildlife corridors, floodplains, wetlands, wildlife refuges, steep slopes, stream valleys, mature forests and Chesapeake Bay Resource Preservation Areas (RPAs). Much of the environmentally sensitive area is associated with two wildlife refuges, which occur more than a mile from the proposed RDF site. Forest and wildlife corridors connect the refuges.

3.2.3.1 Forest and Wildlife Corridor (FWC)

Fort Belvoir has set aside 2,524 acres (1,021 ha) of land for wildlife, including the Accotink Bay Wildlife Refuge, the Jackson Miles Abbott Wetlands Refuge, and a Forest and Wildlife Corridor (FWC) identified in the Fort Belvoir 1993 Forest and Wildlife Corridor Management Plan. The 300-foot (91 m) wide FWC corridor is an area of forested wildlife habitat that connects with off-post forested areas of wildlife habitat and allows animal movement between the larger forested areas, thus maintaining a diverse gene pool and species survival. This corridor, which connects

Jackson Miles Abbott Wetlands Refuge (northeast of Fort Belvoir) with the Accotink Bay Wildlife Refuge (southwest of Fort Belvoir), crosses Woodlawn Road 4,000 feet (1,220 m) south of the proposed project.

3.2.3.2 Floodplains

As part of the National Flood Insurance Program, the Federal Emergency Management Agency (FEMA) has mapped flood hazard areas on Fort Belvoir. The flood insurance rate maps identify areas that would be inundated by 100-year flood or 500-year flood events. There are 100-year floodplains associated with Pohick Creek and Bay, Accotink Creek and Bay, Dogue Creek, Gunston Cove and the Potomac River. Floodplains are typically narrow along steep slopes and broad where slopes are more gradual. Based upon FEMA's Flood Insurance Rate Map (515525 0125D) and site reconnaissance during preparation of this EA, no 100 or 500-year floodplains were identified in the project area. North Creek, which drains the proposed project area, has a narrow watershed that does not meet the Fairfax County threshold (70 acres or more) required for floodplain delineation.

3.2.3.3 Wetlands

The US Army Corps of Engineers regulates wetlands and other waterways under Section 404 of the Clean Water Act (Chapter 7). The discharge of dredged or fill material into these areas requires first obtaining a permit or approval from the Corps of Engineers. Fort Belvoir completed a baseline inventory of wetlands and waterways on the Main Post in 1997 (Paciulli, 1997a). The survey consisted of aerial photo interpretation combined with ground-truthing, following methods outlined in the *1987 Corps of Engineers Wetland Delineation Manual*. Wetland types were classified according to the US Fish and Wildlife Service (USFWS) classification system (Cowardin, et al., 1979). The purpose of the survey was to identify and map the general locations and types of wetlands on the post, not to serve as jurisdictional determinations (US Army Garrison Fort Belvoir, 2001b).

Wetland occurrences in the proposed development area are within small low-lying swales associated with steeply-sloped ephemeral streams or as seepage within upland forested areas. Based upon site reconnaissance, jurisdictional 'waters of the US' occur within the streambeds associated with the project area. A palustrine forested wetland bounds the east edge of DCEETA's east perimeter fence for approximately 800 feet (244 m) north and south of the North Creek crossing (Figure 3-2).

3.2.3.4 Chesapeake Bay Preservation Areas

Under the *Federal Facilities Strategy* and *Federal Work Plan* of 1998 and the 1990 Memorandum of Agreement (MOA) between the USEPA and DoD, Fort Belvoir's actions are consistent to the maximum extent practicable with the Fairfax County Chesapeake Bay Preservation Ordinance (CBPO). The CBPO was enacted pursuant to the Chesapeake Bay

Preservation Act (CBPA), Sections 10.1-2100, et seq., of the Code of Virginia (VAC). This ordinance divides the Fairfax County into Resource Protection Areas (RPAs) and Resource Management Areas (RMAs) designed to protect water quality in the Chesapeake Bay and its tributaries (Figures 3-3 and 3-4).

The existing Fort Belvoir Master Plan–Long Range Component (*RPMP-LRC*) considers Fairfax County designated RPAs, including floodplains, as environmentally sensitive areas (US Army Garrison Fort Belvoir, 2001b). In accordance with the CBPO, development within RPAs is restricted to water dependent activities, maintenance of public activities, passive recreation, water wells, and historic preservation (US Army Garrison Fort Belvoir, 1995). RPA and floodplain management on Fort Belvoir has primarily been through avoidance during development planning (US Army Garrison Fort Belvoir, 2001b).

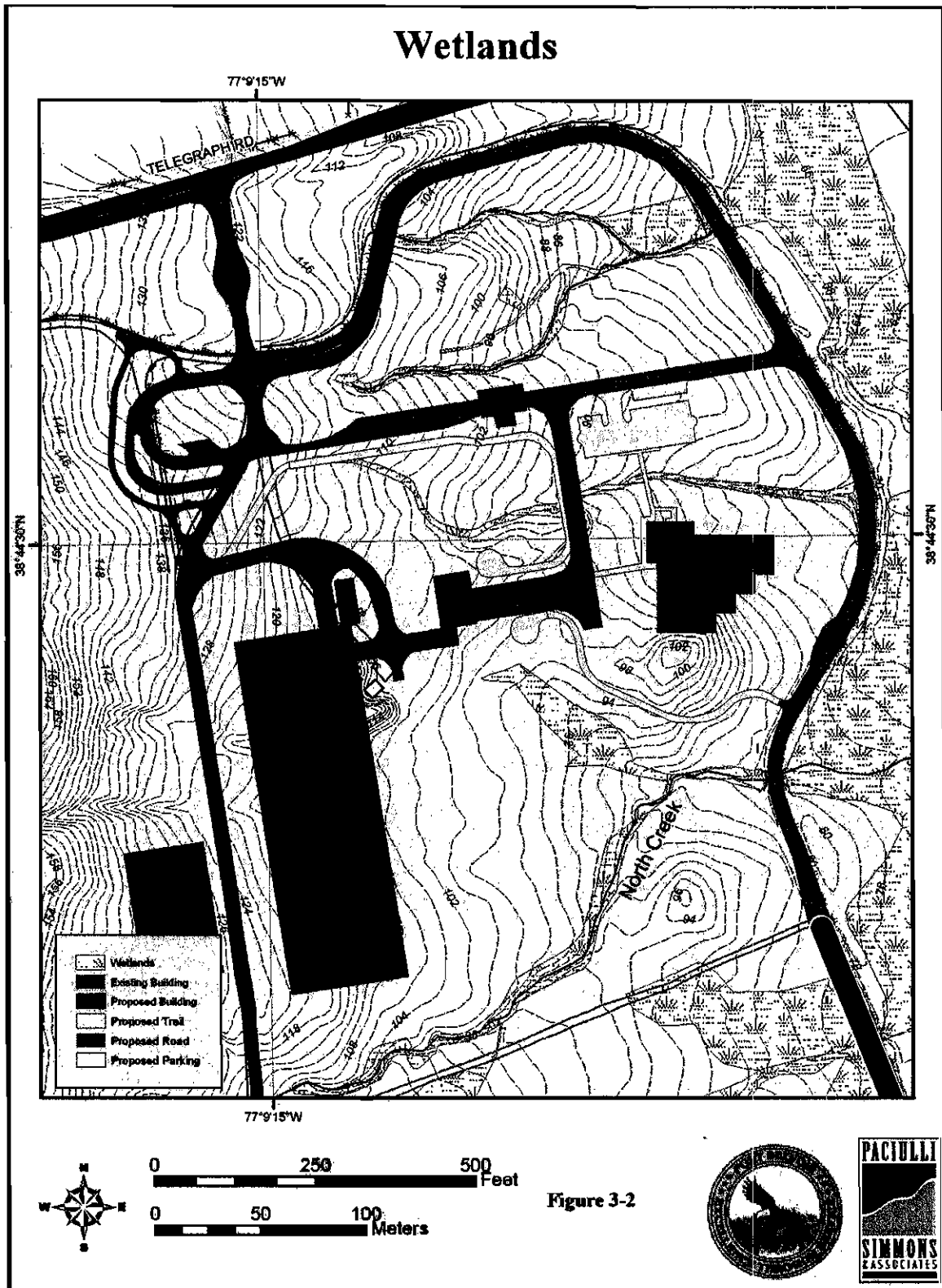
RPAs are comprised of 100-year floodplains and any area within 100 feet (30.5 m) of one or more of the following: tidal wetlands, tidal shores, perennial streams, or non-tidal wetlands connected or contiguous to tidal wetlands or perennial streams (Figures 3-3 and 3-4). Based on a reconnaissance of the proposed project area, RPAs are associated with the three narrow streambeds within the proposed RDF site and four additional streambeds that intersect the east perimeter road.

All land outside of an RPA is classified as an RMA. RMAs are lands that protect the RPAs, and, if improperly used or developed, have the potential to cause significant water quality degradation. These lands may include minor floodplains, highly-erodible soils, steep slopes, highly permeable soils, and certain non-tidal wetlands (Fairfax County, 1993). Development is allowed in RMAs, but the development must meet certain performance criteria including “Best Management Practices” (BMPs); preservation of natural vegetation; minimal disturbance of land; and control of storm water runoff. Fort Belvoir has adopted the Fairfax County practice of designating all non-RPA areas within the installation as RMA.

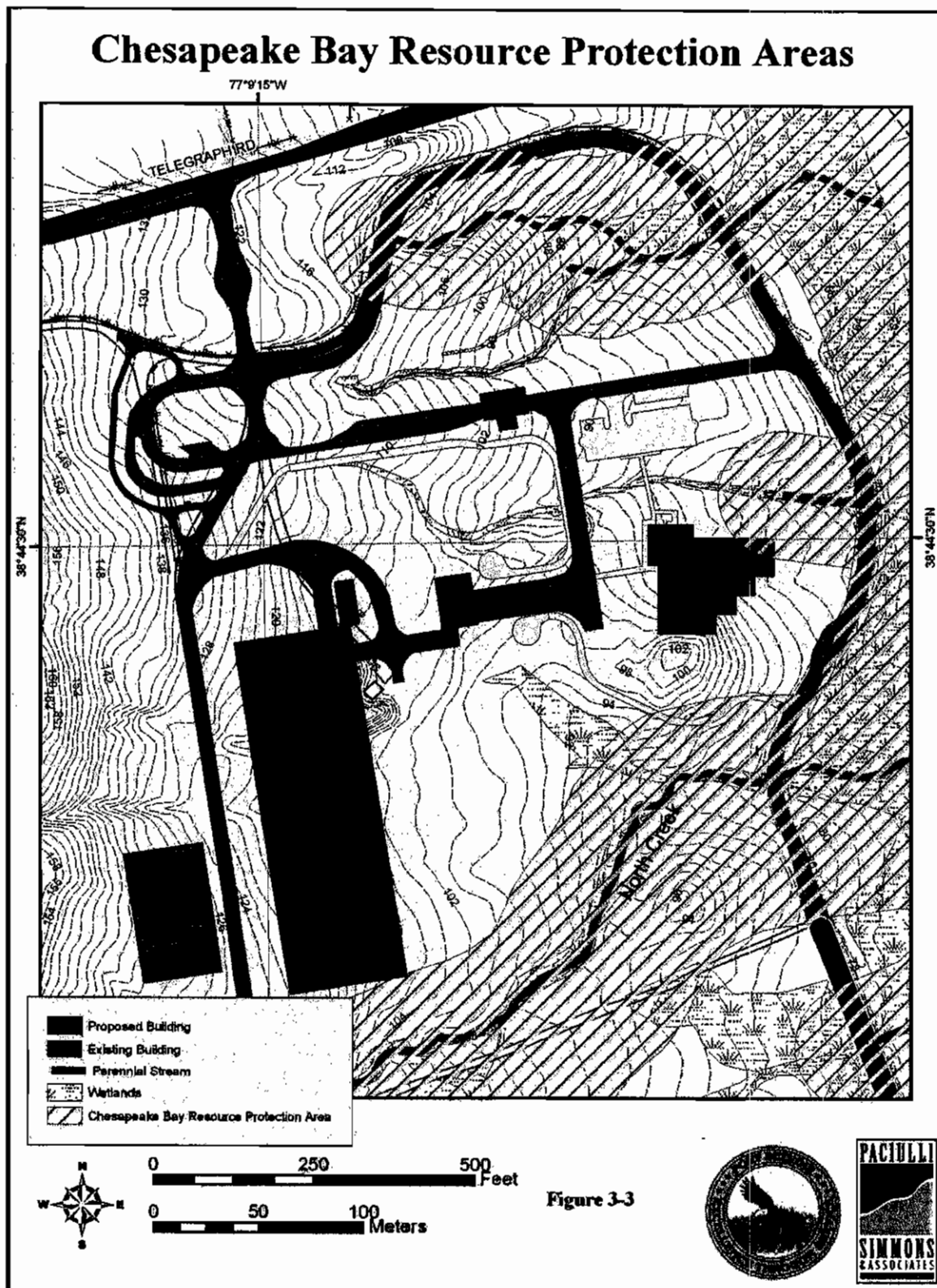
3.2.4 Vegetation and Wildlife Habitats

The project area and other undeveloped areas of Fort Belvoir, such as stream valleys and slopes are home to numerous wildlife species. Fort Belvoir has developed an INRMP that embodies the principles of ecosystem management to preserve native biodiversity. Through the INRMP, Fort Belvoir aims neither to manage for single species nor to increase the number of species or communities on-post. It embraces biodiversity conservation through an ecosystem-based natural resources management plan (US Army Garrison Fort Belvoir, 2001b).

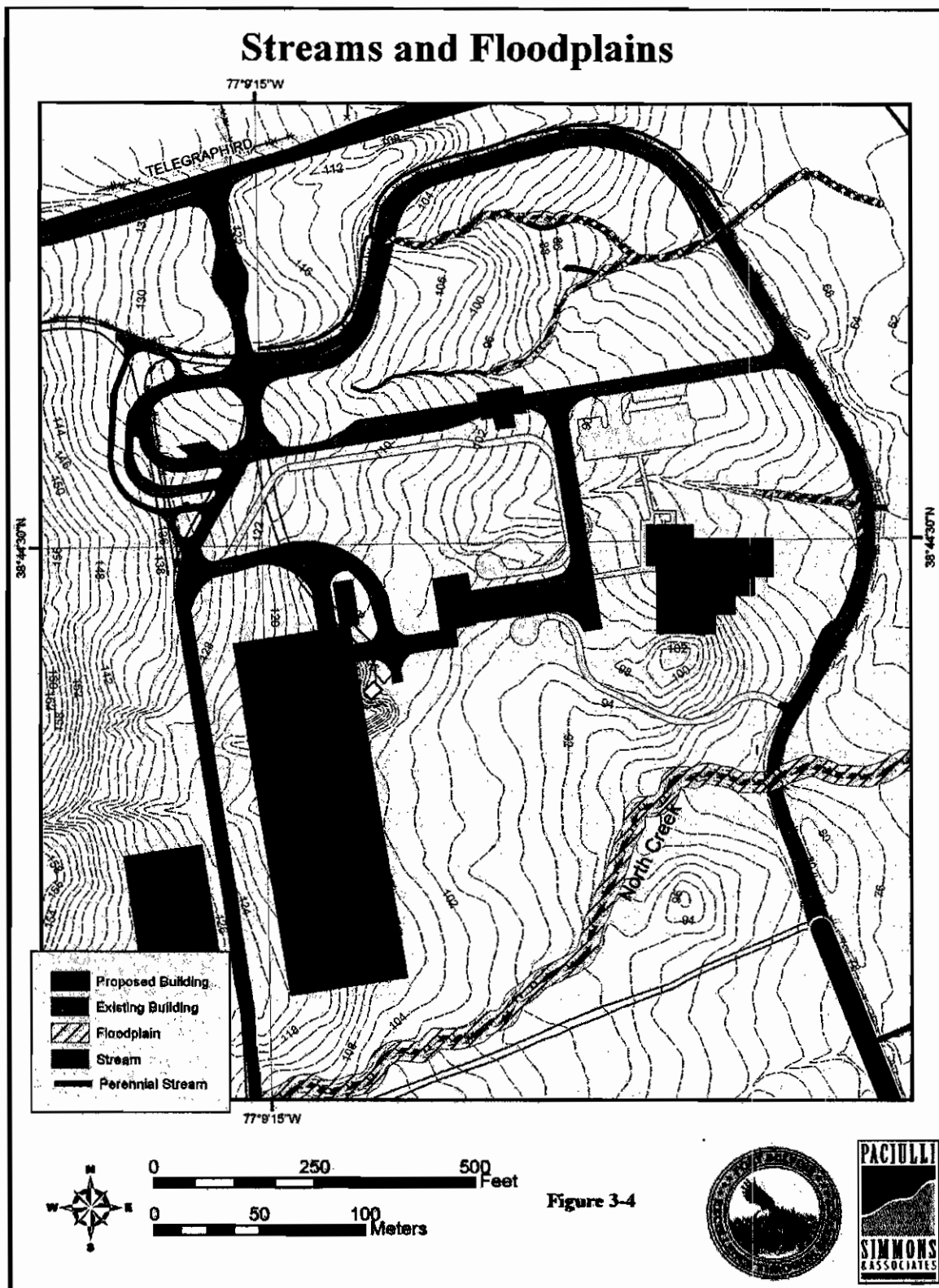
The installation possesses a wide range of habitats, from fairly extensive areas of undisturbed mature forest to significant areas of grassy habitat characterized by old-field seral succession, with transition areas in between them. There are also extensive stream, marsh, and riparian habitats on the installation. The installation supports many wildlife species common to the eastern United States. An installation-wide vegetation study of Fort Belvoir (Paciulli, 1998a)



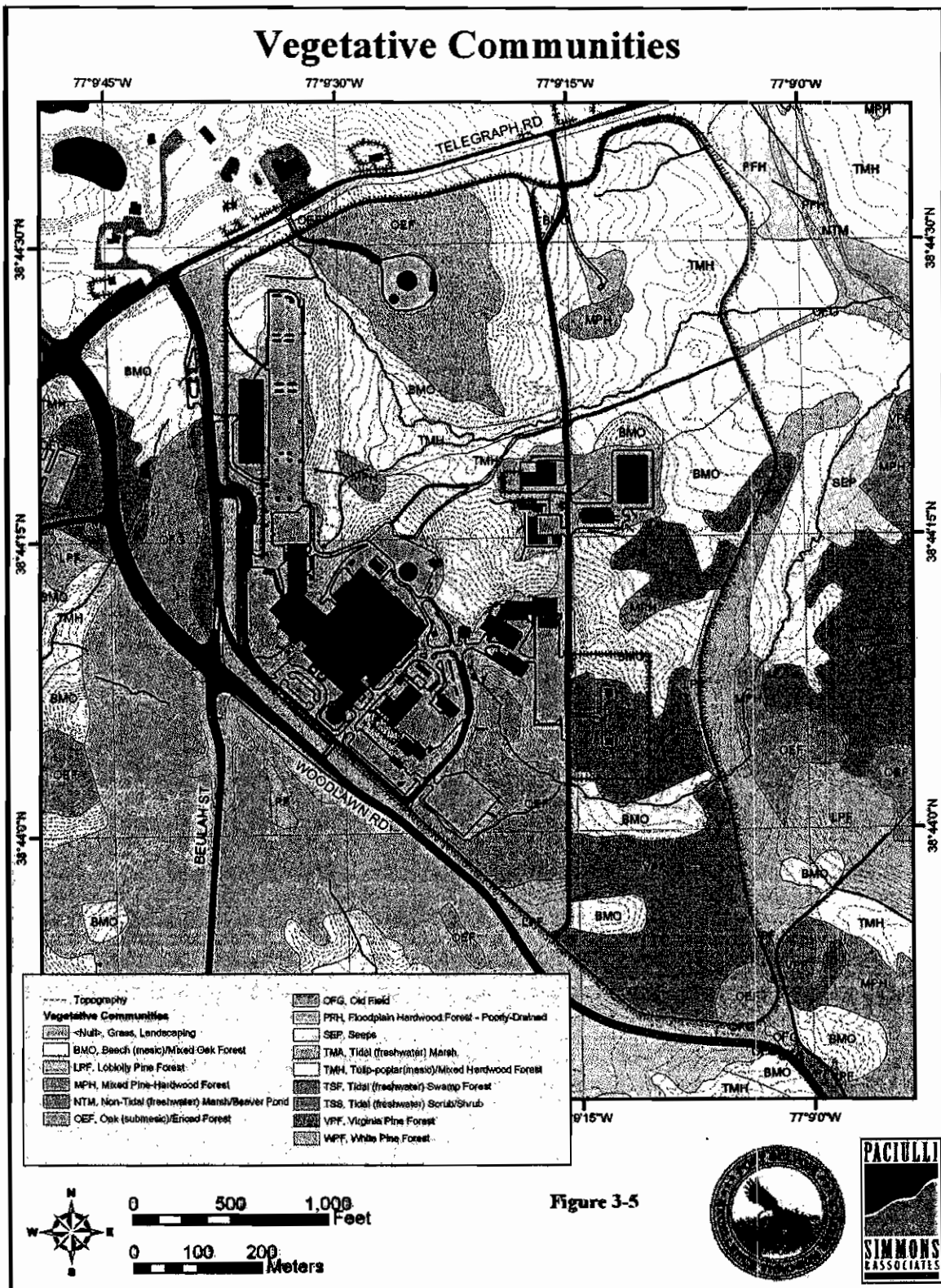
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identified 17 plant community types, four of which possess species with state conservation rankings of rare or "very rare." These 17 types are included in the broader categories of mixed hardwood forests, pine forests, floodplain hardwood forests, wetlands, old-field grasslands and urban land (US Army Garrison Fort Belvoir, 2001b).

Table 3-1
Plant Communities within the Project Areas

Vegetation Types
<p><i>Tulip Poplar Mixed Hardwood (TMH)</i> – Upland forests of moist, fertile ravine slopes and ravine bottoms. Found in habitats similar to Beech Mixed Oak (BMO) forest but on more gradual slopes and ravine bottoms. Overstory – Tulip Poplar with mixed American Beech, White Oak, and Northern Red Oak. Understory – Flowering Dogwood, American Beech, and Red Maple.</p>
<p><i>Mixed Pine Hardwood (MPH)</i> – Transitional forests between early successional pine and climax hardwood types. Hardwoods and pines evenly distributed or neither type more than 70 percent dominant. Virginia Pine is generally the dominant pine in these stands, but Loblolly Pine is also present. Dominant hardwoods in these stands are variable, but are based on topography and the species composition of adjacent hardwoods.</p>
<p><i>Beech Mixed Oak (BMO)</i> – Upland forests located on more gradual slopes, at lower elevations than Oak/Ericad type. Overstory – White Oak and Northern Red Oak. Understory – American Beech, Flowering Dogwood, Red Maple, and Cherryleaf Viburnum. Mature Beech are occasionally found at lower, moister elevations within ravines.</p>
<p><i>Urban Land (URB)</i> – this category includes all developed areas on Fort Belvoir. This category includes all improved and semi-improved grounds including buildings, landscaped areas, the airfield, and golf courses. Plant species include a wide variety of landscaped trees and shrubs, tall fescue grass and Kentucky bluegrass.</p>
<p><i>Virginia Pine (VPF)</i> – Early successional forests of old fields or other land clearings dominated by greater than 70 percent Virginia Pine. Virginia Pine is most abundant, and occurs naturally. White and Loblolly pine have most likely been introduced through plantings.</p>
<p><i>Loblolly Pine (LPF)</i> – Small areas of Fort Belvoir have been planted in Loblolly Pine. Native stands are not prevalent on Fort Belvoir.</p>
<p><i>Oak/Ericad (Heath Family) OEF</i> – Upland forests on gravelly ridges and dry slopes, on tops of hills and bluffs, and along steep well-drained slopes. Overstory – Chestnut Oak, Northern Red Oak, White Oak, and Scarlet Oak. Understory – Deerberry or Mountain Laurel.</p>

Source: US Army Garrison Fort Belvoir, 2001b

The dominant plant community in the proposed entry road and RDF areas is a second growth Tulip Popular Mixed Hardwood (TMH) forest (Figure 3-5). This plant community is dominated by a 40-year old overstory canopy of tulip popular (*Liriodendron tulipifera*) mixed with American beech (*F. grandifolia*), white oak (*Quercus alba*), chestnut oak (*Q. prinus*), northern (*Q. rubra*) and southern red oak (*Q. falcata*), scarlet oak (*Q. coccinea*). The understory trees are young oak and pine saplings with a few American holly (*Ilex opaca*), red maple (*Acer rubrum*), American elm (*Ulmus Americana*), and flowering dogwood (*Cornus florida*) and American

beech, which is similar to Beech Mixed Oak (BMO) forests (Paciulli, 1998). The ground layer is largely sparse and open, except in the perennial stream valley where decaying trees, holly, honeysuckle (*Lonicera spp.*) along with a significant amount of sweet lowbush blueberry (*Vaccinium angustifolium*), blueberry (*V. pallidum*) and scattered patches of greenbrier (*Salix rotundiflora*) and poison ivy (*Rhus radicans*).

The plant community south of the RDF and along the east perimeter road area transitions from a TMH forest to a mixed BMO/Virginia pine forest (VPF) to a mixed VPF/Loblolly pine forest (LPF). The proposed perimeter road widening south of North Creek occurs predominantly within a mixed VPF / LPF forest canopy (Figure 3-5).

Based on information from installation-wide surveys (Chapter 6 - Appendix D), the post contains potential habitat for 43 species of mammals, 274 species of birds, 32 species of reptiles, 27 species of amphibians and 60 species of fish (Ernst and Miller, 1997; Ernst and Belfit, 1997, as cited in US Army Garrison Fort Belvoir, 2001b).

The perimeter fence limits the number of animal species potentially to be found in the undeveloped areas within the entire DCEETA complex. Larger mammals, such as white-tail deer (*Odocoileus virginianus*), are unable to migrate through the perimeter fence / culverts along the east perimeter road. Animals that are well adapted to forest edges, and can tolerate a moderate degree of human presence and disturbance, are likely to be found with the project site. Typical species that have been documented within the vicinity of the DCEETA complex are listed in Appendix D of Chapter 6.

Fort Belvoir, a partner in promoting and supporting the Partners in Flight (PIF) Program, incorporated elements of the PIF Bird Conservation Strategy into the INRMP. An installation-wide land bird survey addressing distribution and seasonal abundance of species was conducted by the Waterway Experimental Station (WES) of Vicksburg, Mississippi and Fort Belvoir's Environmental Natural Resource Division (ENRD) staff. This program identified 10 high priority PIF bird species that breed on Fort Belvoir (Fischer, 2000): Wood Thrush, Prairie Warbler, Kentucky Warbler, Acadia Flycatcher, Yellow-throated Vireo, Worm-eating Warbler, Eastern Wood-Pee-wee, White-eyed Vireo, Prothonotary Warbler, and Louisiana Waterthrush. Fort Belvoir is in the process of preparing a Bird Conservation Plan for the installation.

A breeding bird survey was conducted in the proposed development area during June 2005, 36 different bird species were documented two of which are high priority PIF-listed species, the Wood Thrush and Scarlet Tanager. Although these two species were not documented within the proposed site, both were documented within 250 feet of the southeast quadrant of DCEETA. The proposed development in the northeast quadrant would have minimal impact on these species.

In addition, six species on the Virginia Department of Conservation and Recreation (VDCR) Division of Natural Heritage (DNH) Rare Bird List were documented during survey conducted

in the non-breeding season: Hermit Thrush, Northern Waterthrush, Magnolia Warbler, Golden-crowned Kinglet, Yellow-bellied Sapsucker, and Winter Wren. The sampling sites are located within a large area of undisturbed forested interior core area, 1,200 feet (366 m) east of the DCEETA complex and approximately 1,800 feet (549 m) southeast of the RDF site. Key vegetation habitat features include early to late successional coniferous forests with adjacent palustrine forested wetlands. The forest canopy in this area is a mixture of Virginia Pine (VPF), Loblolly Pine Forests (LPF) and a number of deciduous trees that support suitable nesting areas for these species of birds (Figure 3.5). The mixed VPF / LPF plant community is contiguous with the VPF forest canopy that occurs within DCEETA's southeast quadrant (Subchapters 2.1.2 and 4.2.4).

Fort Belvoir's baseline aquatic inventory characterized Upper Dogue Creek with excellent ratings for riparian width, and good to excellent ratings for shading and vegetation type, channel modification, in-stream habitat and pools. The small size and the intermittent flow conditions of most of the small tributaries on Fort Belvoir preclude all but the smallest fish species with none of the fish species identified as having federal or state threatened or endangered designations. The tributary streams exhibited habitat degradation related to bank stability, and at several locations, the tributary waterways of Dogue Creek exhibited excessive sedimentation at the mouth of the tributary, or culvert blockages, which appear to preclude all fish passage (EA, 2000).

Downstream, Fort Belvoir's baseline aquatic inventory characterized the lower reaches of the installation's waterways as exhibiting typical upper Coastal Plain characteristics (e.g., slow moving, meandering, vegetated banks, predominated by runs with very little pool or riffle areas, in-stream snags and debris, shifting point/sand bars). The benthic macroinvertebrate community of Dogue Creek was described as fairly typical of upper Coastal Plain streams, having lower diversity than would be expected from a Piedmont stream (EA, 2000).

The baseline aquatic inventory surveys recommended conservation measures within specific installation areas, such as Dogue Creek tributaries, to protect regionally rare aquatic resources (EA, 2000 and Hobson, 1996). The surveys consistently cite the impact of present-day storm water runoff on aquatic resources within installation waterways, and the need for storm water management improvements to control these impacts.

3.2.5 Threatened and Endangered Species

The Department of the Army complies with state (to the maximum extent practicable) and federal regulations on species of concern (Chapter 7). The INRMP implements the requirements of the Sikes Act (16 USC 670a et seq.) as amended in the Sikes Act Improvement Act of 1997; DoD Instruction 4715.3, *Environmental Conservation Program*; and Army Regulation (AR) 200-3, *Natural Resources – Land, Forest and Wildlife Management* (US Army Garrison Fort Belvoir, 2001b). The Virginia Department of Conservation and Recreation (VDCR) Division of

Natural Heritage (DNH) was consulted for reviews of potential occurrences of federal or state endangered or threatened species on the proposed action sites (Chapter 6 - Appendix F).

The USFWS has previously indicated that the general project area might include suitable habitat for small whorled pogonia (*Isotria medeoloides*), an orchid federally-and state-listed as endangered plant species. However, VDCR-DNH indicated by letter dated March 4, 2005 that the project was not likely to disturb natural heritage resources (Chapter 6 - Appendix F). According to VDCR-DNH one federal and three state-listed animal species are known to occur on Fort Belvoir: the wood turtle (*Clemmys insculpta*), the bald eagle (*Haliaeetus leucocephalus*) and peregrine falcon (*Falco peregrinus*).

The wood turtle (*C. insculpta*), a state-listed threatened species, inhabits forested floodplains in close proximity to wet meadows and farmlands. Although highly terrestrial, a wood turtle's primary habitat requires the presence of water. Wood turtles occur in upstream portions of the Potomac River watershed, as well as in the tributaries of creeks such as Accotink Creek. The turtle uses stream and creek bottoms for overwintering sites within underwater deep pockets (Mitchell, 2005). After emergence from aquatic hibernation sites, wood turtles seek out adjacent riparian corridors and associated uplands for summer foraging and nesting areas (Ernst et al., 1994; Mitchell, 1994). Local distributions and status of wood turtle populations remain unknown. Thus, surveys for wood turtles are undertaken prior to all land use alterations.

The nearest documented wood turtle population is in Huntley Meadows Park, northeast of the Jackson Miles Abbott Wildlife Refuge which is over one mile (1.61 km) southeast of the project area. There have been three wood turtle sightings on Fort Belvoir in the vicinity of the Jackson Miles Abbott Wetland Refuge, indicating that this species may become established on the installation. There have been three wood turtle sightings documented within Fort Belvoir since 1998:

Dogue Creek shoreline near Jackson Miles Abbott Wildlife Refuge (Ernst et al, 1997).
Accotink Creek shoreline near US Route 1 (Mitchell and Pilcicki, 2000).
Accotink Creek and Poe Road bridge (Mitchell and Pilcicki, 2000).

A reconnaissance of the project study area, was conducted in April 2005 to determine the presence of the wood turtle. The largest stream in the area was too small to provide sufficiently deep pools for overwintering. The surrounding habitat within the project area, including the perimeter road expansion zone, has little appropriate herbaceous cover for foraging. Because there are no appropriate hibernation sites in the DCEETA stream, the only possible occurrence of wood turtles in this area is from those individuals that may be seeking foraging sites from the Dogue Creek riparian area. The study concluded that there is no suitable habitat for this species (Mitchell, 2005).

Despite the perimeter fence, turtles and other amphibians may enter into the proposed RDF area by moving upstream in the North Creek streambed and passing through grates on the DCEETA

side. Lack of good foraging habitat for wood turtles within the DCEETA complex may force the turtles to wander for several days and likely depart upon finding little food.

The bald eagle (*H. leucocephalus*), a federally-listed threatened species and a state-listed endangered species, has been proposed for delisting by the federal government. The bald eagle has been known to forage within Fort Belvoir; however, they tend to nest in areas away human contact. Shorelines along creeks, rivers and lacustrine areas on Fort Belvoir provide valuable nesting, foraging and loafing habitat for resident and migratory bald eagles. Potential threats to bald eagle nesting, foraging and loafing habitat include disturbances cause by near shore activities and waterfowl hunting. The proposed project is more than 3 miles (4.8 km) from the nearest bald eagle nest on Fort Belvoir, and more than 2.4 miles (4 km) for Fort Belvoir's shoreline.

The peregrine falcon (*F. peregrinus*), a state-listed endangered species, occurs along the Accotink Creek/Accotink Bay stream corridor during fall migration. Peregrine falcons have been recorded during three fall migrations (six sightings in 1998, four in 1999, and three in 2000) at Fort Belvoir. Potential threats to the peregrine falcon foraging habitat include disturbances near shoreline, shoreline development, and waterfowl hunting. The peregrine falcon occurs infrequently on post, but is not considered to be a resident. The project area is 2.8 miles (4.8 km) from the Accotink Creek corridor frequented by the bald eagle and peregrine falcons.

The only currently known occurrence of the Northern Virginia well amphipod (*Stygobromus phreaticus* – an amphipod that is under consideration for federal listing) was discovered during DCR-NHP surveys at Fort Belvoir in 1996. This was the first known sighting of the amphipod since its collection from in Vienna in and Alexandria in the 1940's (Hobson, 1996b). Little is known about the amphipod and extensive subsequent sampling on the Fort Belvoir and in Fairfax County has not yielded additional populations of this species. Consequently, this species is considered as "globally rare" and potentially vulnerable to extinction. Although it is not considered as endangered or threatened by the state, Fort Belvoir decided to focus a survey on the appropriate habitat of this extremely rare species. The study revealed that freshwater amphipods were present in streams, springs, and seepage habitats within the study area, however, no evidence was obtained for the presence of *S. phreaticus* or any other species of *Stygobromus* (VDCR, 2005). In addition, the study concluded that there is no suitable habitat for this species.

Although the small whorled pogonia (*I. medeoloides*), an orchid that is federally- and state-listed as an endangered plant species has not been sighted in Fairfax County, Fort Belvoir has decided to focus on performing surveys on appropriate habitat of this extremely rare plant species. This species is more often found on level to gently sloping terrain in third-growth upland forests with an open understory where the slopes face north or east. Based on field observations, Dr. Donna Ware of William and Mary College determined that typical small whorled pogonia (*I. medeoloides*) habitat does not occur within the perimeter fence for the DCEETA complex.

The Coastal Plain/Piedmont Acidic Seepage Swamp (SEP) plant community, designated as 'very rare' by VDCR-DNH, has been identified at three locations on Fort Belvoir and are significant vegetation communities (Subchapter 3.2.4). Seep forests are often open-canopy forests of groundwater-saturated flats and slopes, generally surrounded by mixed hardwood forests. One documented occurrence is along upland tributaries of the Dogue Creek watershed. This SEP community supports a mix of wetland and upland plants under an open forest canopy of red maple (*A. rubrum*) and yellow poplar (*L. tulipifera*). It occurs where groundwater flows to the surface. Characteristic species are red maple, black gum (*Nyssa sylvatica*), sweetbay magnolia (*Magnolia virginiana*), skunk cabbage (*Symplocarpus foetidus*), sensitive fern (*Onoclea sensibilis*), and royal fern (*Osmunda regalis*). Key indicators are large mats of skunk cabbage and other herbaceous wetland vegetation.

Although not a dominant forest type, seep forests are of special interest at Fort Belvoir, because they provide unique wetland habitats within the dominant upland forest (Paciulli, 1998). These seeps provide habitat on Fort Belvoir for the state rare sphagnum sprite (*Nehalennia gracilis*) and a state rare sedge (*Carex vestitia*). The plant community provides habitat for several watchlist species including the gray petaltail (*Tachopteryx thoreyi*), aurora damsel (*Chromagrion conditum*), and eastern red damsel (*Amphiagrion saucium*). The watchlist dragonfly species, *Gomphasechna furcillata*, has also been recorded in this habitat on Fort Belvoir (Hobson, 1996). A 3.5-acre (1.42 ha) SEP community, largest in the Dogue Creek watershed, is along South Creek approximately 300 feet (92 m) east of the east perimeter road (McCoy and Fleming, 2000). This occurrence does not extend west into the DCEETA complex along South Creek.

3.3 Cultural Resources

Implementation of the proposed action must comply with Section 106 of the National Historic Preservation Act (NHPA) of 1966 (as amended) which provides that federal agencies take into account the effects of their actions on any district, site, building, structure, or object included in, or eligible for inclusion in, the NRHP. The intent of the NHPA is to integrate consideration of historic preservation issues into the early stages of project planning by a federal agency.

Fort Belvoir encompasses a unique collection of historic properties associated with the pre-installation history and the early development of the installation as a training camp (US Army Garrison Fort Belvoir, 2001c). These resources include buildings and structures, as well as archeological sites. Fort Belvoir's current cultural resources program is the result of an extensive series of identification, evaluation, management, and interpretation efforts dating back to the 1920's. The Fort Belvoir *Integrated Cultural Resources Management Plan (ICRMP)* identifies the post's cultural resources and provides guidelines for their management. According to the ICRMP, the Fort Belvoir Historic District has several National Register-eligible properties, all of which are listed in the Virginia Landmark Register.

There was two potentially eligible archaeological sites immediately adjacent to the proposed RDF site. The Phase I Cultural Resources Assessment conducted by Milner and Associates

determined that site 44FX1436 had been destroyed by the construction of the original perimeter road (JMA, 2005a). This site was determined to be a low-density prehistoric site that contained disturbance that pre-dated road construction, and Milner and Associates recommended that no further work is necessary.

Previous research identified one site, site 44FX459 located on either side of the current William Woods Road entry, bisected by the perimeter road, as having historic significance (Fehr, et.al., 1988). The Phase I Cultural Resources Assessment conducted by Milner and Associates determined that site 44FX459 consists of a historic cemetery, the Potter-Milan Family Cemetery and four historic sites (JMA, 2005b). All five locations are within the James Potter farmstead, historically known as Potter's Hill, and date back to the mid-1850's. The site consisted of several artifact concentrations with undefined site boundaries. A 1988 Phase I Cultural Resource Assessment identified two locations as having buried nineteenth-century artifacts (Fehr, et.al., 1988). Site 44FX459 is recommended for Phase II evaluative testing, to include shovel tests and test unit excavations, to determine historic significance and site boundaries. No other potentially eligible archaeological sites will be impacted by the current design of the proposed project. No historic structures were identified in the proposed development area.

3.4 Hazardous Substances

Hazardous waste management at Fort Belvoir is conducted in compliance with the Resource Conservation and Recovery Act (RCRA). Fort Belvoir has a Hazardous Waste Management / Waste Minimization (HWMP) Plan and a Master Spill Plan. Fort Belvoir has one RCRA Part B permit for storage of hazardous wastes from the Virginia Department Environmental Quality (VDEQ). All current and former hazardous waste permitted facilities present potential constraints to future development, in that closure of such sites is required prior to reuse.

DCEETA participates in the "Greening of Government" program (EO 13101, Chapter 7) that promotes the purchasing of products to reduce solid and hazardous waste through implementing a centralized procurement and distribution for tracking, distribution and management of toxic or hazardous material. In addition, the cleaning and maintenance departments have replaced toxic and hazardous materials with environmentally-friendly chemicals. The Emergency Planning and Community Right-to-Know Act (EPCRA) responsibility for filing annual hazardous material and toxic chemical reports is through Fort Belvoir ENRD (Chapter 7).

DCEETA's hazardous and special waste is handled through the Fort Belvoir ENRD with a trained Emergency Response Team that responds to on-site spills within the DCEETA complex. There are three hazardous waste accumulation sites within the Main DCEETA Complex with a 90-day satellite accumulation area located in the Power Plant area, 1,200 feet (366 m) south of the site. All four sites will continue to be used for spent hazardous material that can no longer be utilized. At the RDF site, a self-contained hazardous materials building will store hazardous material, such as flammable and non-flammable gases, corrosives liquids, flammable and non-

flammable liquids and some toxic liquids, that are maintained in stock for distribution to various DCEETA users.

A preliminary assessment/site inspection conducted in 1982 for the Installation Restoration Program (IRP) indicated that there were no Comprehensive Response, Compensation, and Liability Act (CERCLA – Chapter 7) sites identified on Fort Belvoir (US Army Garrison Fort Belvoir, 2000a). The Fort Belvoir ENRD manages the one remaining active IRP at Building 324 on South Post. Based on a review of Federal and state environmental databases, the proposed site does not appear to have been subjected to disposal of any hazardous waste. There are no known hazardous waste contaminated sites that are in close proximity to the RDF site (USEPA and VDEQ websites, March 2005).

Fort Belvoir has about 121 underground storage tanks (USTs), 25 of which are regulated. These tanks contain substances such as heating oil, diesel fuel, gasoline, JP-8, lubricants, used oils and hazardous waste (fuel-contaminated water). In addition, there are 197 aboveground storage tanks (ASTs) on the installation, 9 of which are regulated. Fort Belvoir has completed a program of tightness testing, removal, replacement and upgrading of the regulated tanks, such as ASTs and USTs.

DCEETA's existing fuel system has three separate components: delivery, storage and distribution with 13 USTs of various sizes existing on the complex with a fuel oil tank storage and distribution facility located south of Telegraph Road. Fuel oil delivery is being conducted by small delivery trucks to the existing seven underground storage tanks (USTs) in DCEETA's Main Building. All tank locations have double-walled USTs and have been refitted with standardized fuel-tank monitoring (FTM) devices (Veeder-Root TLS-350 units) and leak detection systems. A tank activity permit is required to be submitted to Fort Belvoir ENRD prior to installation of USTs. All USTs at the facility are to be equipped with Veeder-Root TLS-350 FTM devices standard for Fort Belvoir USTs, as all other FTMs on Fort Belvoir.

Under existing security procedures, incoming fuel tanker deliveries are inspected at the Main Gate at Road B (Figure 3-1), then escorted through the complex to offload fuel oil. Unleaded gasoline is offloaded at the Waste Destruct Facility, which is adjacent to the Power Plant, 1,400 feet (427 m) south of the proposed RDF site. These security procedures will be eliminated after operation of the RDF site has commenced.

3.5 Air Quality

3.5.1 NAAQS and Ambient Air Quality

Virginia's climate is classified as humid subtropical. January and February are the coldest months (average temperature of 34°F [1°C]) at Fort Belvoir; July is the hottest month (average temperature of 79°F [21°C]). Fort Belvoir's proximity to the Atlantic Ocean on the east and its low altitude are the major forces influencing its climate. Average annual precipitation is 42

inches (107 cm), and is well distributed throughout the year with an average 20.6 inches (52 cm) of snowfall per year (US Army Garrison Fort Belvoir, 2003).

USEPA Region 3 and the Virginia Department of Environmental Quality (VDEQ) regulate air quality at Fort Belvoir. The Clean Air Act (CAA) (42 USC 7401-7671q), as amended, gives the USEPA the responsibility to establish the primary and secondary National Ambient Air Quality Standards (NAAQS) (40 CFR §50) that set safe concentration levels for six criteria pollutants: particulate matter measuring less than 10 microns in diameter (PM_{10}), sulfur dioxide (SO_2), carbon monoxide (CO), nitrous oxides (NO_x), ozone (O_3), and lead (Pb). Short-term standards (1-, 8-, and 24-hour periods) have been established for pollutants contributing to acute health effects, while long-term standards (annual averages) have been established for pollutants contributing to chronic health effects. Each state has the authority to adopt standards stricter than those established under the federal program; however, the VDEQ accepts the federal standards.

Air-quality in Virginia is monitored by VDEQ at representative sites within each region throughout the state. Fairfax County Health Department monitors background levels of criteria pollutants at four locations within the county. The most recent available data for the Fairfax County Monitoring stations can be used to describe the ambient air-quality conditions at Fort Belvoir (Table 3-2).

Table 3-2
The National Ambient Air-Quality Standards (NAAQS) and Monitored Air Quality Concentrations for Fairfax County, Virginia

Pollutant and Averaging Time	Primary NAAQS	Secondary NAAQS	Monitored Data	Monitoring Station Location
CO				
8-Hour Maximum (ppm)	9	9	2.8	McLean
1-Hour Maximum (ppm)	35	35	3.6	McLean
NO₂				
Annual Arithmetic Mean (ppm)	0.053	0.053	0.018	Mason Gov Ctr
Ozone				
8-Hour Maximum (ppm)	0.08	0.12	0.120	Sherwood Hall Lane
PM₁₀				
Annual Arithmetic Mean ($\mu\text{g}/\text{m}^3$)	50	50	20	Brandon Avenue
24-Hour Maximum ($\mu\text{g}/\text{m}^3$)	150	150	59	Brandon Avenue
SO₂				
Annual Arithmetic Mean (ppm)	0.03		0.006	Mason Gov Ctr
24-Hour Maximum (ppm)	0.14		0.023	Balls Hill Road
3-Hour Maximum (ppm)		0.5	0.039	Balls Hill Road

Source: VDEQ 2004; 40 CFR 50.1-50.12 Notes: ppm = parts per million $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter

3.5.2 Attainment Status

Federally delineated Air-Quality Control Regions (AQCR) in violation of the NAAQS are designated as “nonattainment” areas for the criteria pollutants. AQCR that comply with air-quality standards are designated “attainment” areas. “Maintenance” AQCR are areas that have previously been designated “nonattainment,” and have been redesignated to “attainment” for a probationary period through implementation of maintenance plans.

Fort Belvoir is located within the National Capital Interstate AQCR 47 (40 CFR 81.12). AQCR 47 is designated by the USEPA as moderate nonattainment for the 8-hour O₃ standard. AQCR 47 is in attainment for all other criteria pollutants (40 CFR 81.347). Ft Belvoir is also located in a region, including 22 states and Washington D.C., designated by the USEPA as an ozone transport region. Because the proposed action is in a nonattainment area for an ozone transport zone and for PM_{2.5}, a general conformity determination is required if projected air emissions is expected to exceed *de minimus* thresholds. An air conformity analysis has been performed to determine whether projected air emissions would exceed *de minimis* thresholds (Subchapter 4.4 and Chapter 6 - Appendix A).

3.5.3 Existing Base-wide and Regional Emissions

Fort Belvoir tracks and reports air emissions from all their stationary air emission sources. These stationary sources include 54 boilers, 10 generators, 2 incinerators, 7 underground storage tanks (USTs), a firefighting training facility, and over 225 insignificant sources.

Table 3-3
Total Stationary Source Emissions for Fort Belvoir and AQCR 47

Criteria Pollutants	Fort Belvoir Stationary Source Emissions (tpy)	AQCR 47 Total Emissions (tpy)
NO _x	210.8	117,384
VOCs	8.0	178,485

¹ Source: Fort Belvoir, 2004

² Source: MWCOG 2003, 2005 Projected Levels

Note: tpy=tons per year

These insignificant sources include closed sanitary landfills, above ground storage tanks (ASTs), spray painting operations, welding operations, asphalt paving activities, degreasers, oil-water separators, woodworking activities, printing operations, pesticide application activities, residential and other smaller No. 2 fuel oil and natural gas boilers, and emergency generators. Also, VDEQ periodically compiles an inventory of criteria pollutant emissions from point, area and mobile sources in the state. Annual emissions for Fort Belvoir and AQCR 47 are listed above (Table 3-3).

3.5.4 Existing Localized Carbon Monoxide

Existing carbon monoxide (CO) concentrations were estimated for peak traffic periods at two locations adjacent to the proposed action: on Telegraph Road between the current DCEETA entrance and the proposed William Woods Road gate; and, at the intersection of Telegraph Road and the current DCEETA entrance. These locations were selected based upon the anticipated greatest potential for changes in traffic if the Proposed Action Alternative is implemented. It is at these locations that changes in CO concentrations would be greatest (Table 3-4).

Table 3-4
Existing Localized Carbon Monoxide Levels at Nearby Intersections

Location	One-Hour Concentration (ppm)	Eight-Hour Concentration (ppm)
Telegraph Road Between Road B Entrance and Proposed William Woods Entrance to the Remote Delivery Facility	8.7	5.0
Telegraph Road and the Road B Entrance	8.8	5.0

Note: CO levels include background concentrations of 6 ppm (one-hour) and 3 ppm (eight-hour).

The CO analysis incorporated mobile emission factors, current traffic volumes, intersection phasing data, and worst-case meteorological conditions. Detailed methodology for the determination of localized CO concentrations at and around the locations of interest is in Appendix A. There are no existing violations of the one-hour CO standard of 35 ppm and the eight-hour CO standard of 9 ppm at the locations of interest (US Army Garrison Fort Belvoir, 2002c).

3.6 Noise

Sound is a physical phenomenon consisting of vibrations that travel through a medium, such as air, and are sensed by the human ear. Human response to sound varies according to the type and characteristics of the sound, distance between source and receiver, individual sensitivity, and time of day. Noise is any undesirable sound. Noise may interfere with communication, produce awakenings from sleep or, in some cases, damage hearing. Noise is often generated by activities essential to a community's "Quality of Life", such as construction or vehicular traffic.

There are many different metrics that can be calculated for sound. In this EA, Equivalent Sound Level (Leq), A-Weighted Sound Pressure Level (ASPL), and Day-Night Level (DNL) are used to describe the overall noise environment. These particular sound metrics correlate to the effects of noise on people.

- **Equivalent Sound Level (Leq)** is a time weighted average of sound over a given period.
- **A-Weighted Sound Pressure Level (ASPL)** The application of "A" weighting to sound pressure levels compensates for the different "loudness" perceived by humans at different

frequencies. Table 3-5 lists ASPLs associated with some everyday activities and devices. All sound levels analyzed in this EA are A-weighted unless otherwise noted.

- **Day-Night Average Sound Level (DNL)** DNL is a cumulative metric that accounts for the total sound energy occurring over a 24-hour period, with nighttime noise weighted more heavily to reflect community sensitivity to nighttime noise. Studies of community annoyance to numerous types of environmental noise show that DNL correlates well individual annoyance and community reaction to noise (FICON, 1992).

Table 3-5
Common Sound Levels

Outdoor	dBA	Indoor
Snowmobile	100	Subway Train
Tractor	90	Garbage Disposal
Noisy Restaurant	90	Blender
Downtown (Large City)	80	Ringling Telephone
Freeway Traffic	70	TV Audio
Power Lawn Mower	70	
Normal Conversation	60	Sewing Machine
Rainfall	50	Refrigerator
Quiet Residential Area	40	Library

Source: USEPA, 1974

3.6.1 Regulatory Requirements

The Noise Control Act of 1972 (PL 92-574) directs federal agencies to comply with applicable federal, state, interstate, and local noise control regulations. In 1974, the USEPA provided information suggesting continuous and long-term noise levels in excess of DNL 65 dBA are normally unacceptable for noise-sensitive land uses such as residences, schools, and hospitals. In addition, the Federal Highway Administration (FHWA, 1995) has established Noise Abatement Criteria (NAC) for various land-use activity areas to determine when a traffic noise impact will occur (Table 3-6). A traffic noise impact can occur when the predicted noise level at a receiver approaches (is within 1 dB of), equals or exceeds the NAC, or exceeds the existing noise level at a receiver by greater than 10 dBA.

Table 3-6
Federal Highway Administration Noise Abatement Criteria

Activity Category	Leq [dBA]	Description of Land Use Activity Areas
A	57 (exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries and hospitals.
C	72 (exterior)	Developed lands, properties or activities not included in categories A or B above.
D	--	Undeveloped lands.
E	52 (interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals and auditoriums.

Source: FHWA, 1995.

3.6.2 Existing Conditions

Existing noise levels in the vicinity of Fort Belvoir, including the Proposed Action Alternative project area, are typical for a suburban community. Day-night sound levels of 50-60 dBA can be expected. Studies show that in a suburban setting it can be anticipated that up to seven percent of individuals are highly annoyed by the existing noise conditions (USEPA, 1974).

The primary source of noise near the proposed location is vehicular traffic. Because the Proposed Action Alternative would contribute to small changes in localized traffic patterns, existing sound levels for receptors near the Proposed Action Alternative were estimated for impact assessment purposes, using the FHWA Traffic Noise Model (TNM), Version 1.1 developed by the Volpe Acoustics Center. The TNM software considers the number, type and speed of vehicles; highway alignment and grade; cuts, fills and natural berms; surrounding terrain features; and the locations of activity areas likely to be impacted by the associated traffic noise. Existing and predicted traffic noise levels were modeled at the two anticipated "worst-case" receivers (Table 3-7) adjacent to Telegraph Road. These receptors are those closest to the roadway, between the existing DCEETA gate and the proposed William Woods Road Gate.

Table 3-7
Existing Noise Levels for Worst Case Receptors on Telegraph Road

Receiver	NAC Category	NAC Level	Existing 2003
Golf Course 60m from Centerline	B	67	60.1
2 Residences 48m from Centerline	B	67	61.5

Source: FHWA, 1995

3.7 Infrastructure and Utilities

3.7.1 Potable Water Supply

Fort Belvoir owns, operates and maintains the on-post water supply and distribution system, which is slated for privatization in the near future (except for DCEETA). Fairfax County Water (formerly Fairfax County Water Authority) provides potable water for Fort Belvoir through three entry locations: Pole Road, Telegraph Road, and Beulah Road. This system has storage capacity of approximately 2.3 million gallons (8.7 million liter). This includes about 78 miles (126 km) of more-than-6 inch (15 cm) diameter water main pipes, one pump station, two vaults and four storage tanks (three elevated, free-standing aboveground tanks and one at ground-level).

Fairfax Water supplies potable water to the proposed development area from two sources. The primary source is a 16-inch (40 cm) line that ends at the intersection of Telegraph Road and Road B (Figure 3-1). The second source is a 30-inch (76 cm) line that runs along Telegraph Road. A 1.5 million-gallon (5.68 million liter) aboveground steel water storage tank and pump house building was constructed 2,200 feet (671 m) west of the proposed development area in 2002. Water would be supplied downslope from the tank by gravity feed with 80 PSI into two looped lines (a six inch [15.24 cm] and a 10 inch [25.4 cm]) that are connected to an existing 12-inch (30.5 cm) water main on the west side along William Woods Road (US Army Fort Belvoir, 2002c). The RDF would have fire hydrants at 500-foot (153 m) intervals would provide fire protection throughout the RDF area.

3.7.2 Sanitary Sewer

Fort Belvoir owns, operates and maintains the on-post sanitary sewer system, which includes 37 sewage pumping/lift stations and two main pumping stations. As of 2000, the installation discharged about 7.8 million gallons (29.5 million liters) per day of wastewater to the Fairfax County system (US Army Garrison Fort Belvoir, 2001b).

The proposed 1,200 feet (366 m) of six to eight-inch (20 cm) gravity lines will accommodate the additional discharge and will connect with the existing 12-inch (30.5 cm) main line located south of North Creek (Figure 3-1). This gravity line intersects with an 18-inch (45 cm) sanitary sewer line that connects DCEETA with the Humphries Engineering Center (HEC). This line discharges off-site to the Fairfax County Sanitary District located east of the HEC facility (US Army Garrison Fort Belvoir, 2000a).

3.7.3 Storm Water

The Clean Water Act of 1977 established requirements for discharges of storm water under the National Pollutant Discharge Elimination System (NPDES) permit program (Chapter 7). Within the Commonwealth of Virginia, this program is administered through the Virginia Pollutant Discharge Elimination System (VPDES) permit program which is responsible for regulating storm water discharges from municipal, industrial, and construction activities greater than one acres (Chapter 6 - Appendix A). As of January 2005, permitting responsibilities for construction activities and separate storm sewer systems (MS4s) was transferred from Department of Environmental Quality (DEQ) to the Department of Conservation and Recreation (DCR). Fort Belvoir, classified as a 'small' (MS4) under the Phase 2 Storm Water Regulations, has a general storm water permit that is in affect through December 2008.

Under the Phase 2 Storm Water Regulations, any construction activity, such as clearing, grading, and excavation, that is greater than 2,500 sq ft (23.25 m²) within a MS4 requires a storm water permit. Fort Belvoir's storm water system consists predominately of open channels that receive sheet flow. Storm water drains from these built-up areas through a combination of storm drains, culverts, curbs and gutters and open channels.

Based on the Executive Council of the Chesapeake Bay Program Directive 01-1, Managing Storm Water on State, Federal and District-owned Lands and Facilities, Fort Belvoir personnel will lead by example in controlling nutrient, sediment and chemical contaminant runoff during project construction and operation of the RDF. Drainage from the DCEETA complex drains into two main drainage basins that control storm water flow into the Dogue Creek tributaries (US Army Garrison Fort Belvoir, 2000b). A detention basin is located at the west end of South Creek watershed in the main DCEETA complex (Figure 1-3). A second detention pond is located at the west end of the North Creek (Figure 3-1) watershed, approximately 1,890 feet (576 m) west of the proposed RDF. The proposed development area or the existing east perimeter road, have no existing storm water structures located in the vicinity or along the east perimeter road. Most of the existing storm water drainage within the proposed RDF site drains south to North Creek (Figure 3-1), with the remainder draining north.

3.7.4 Natural Gas

Fort Belvoir's natural gas system is owned and operated by Washington Gas. As of 2000, natural gas was distributed to the post through 25 miles (40 km) of main gas line and 11 miles (18 km)

of service lines mostly servicing the family housing areas. Fort Belvoir has been upgrading its natural gas supply system since 1993 and will continue to do so over the next few years. Improvements include the conversion of facilities from #2 fuel oil to natural gas; replacement of old piping; and placement of new lines and meters (US Army Garrison Fort Belvoir, 2001a). The main line parallels DCEETA's east perimeter between natural gas lines along Woodlawn and Telegraph Roads.

3.7.5 Electricity

Fort Belvoir owns the entire on-post electrical system to include the distribution feeder system, all of which is scheduled for privatization in Fall 2005. The installation is slated for privatization in the near future except for the DCEETA system. Power is transferred from the Dominion Virginia Power (DVP) substation to a Fort Belvoir-owned combination substation near the Humphries Engineering Center (HEC), which is 1.5 miles (2.4 km) northeast of the project area and three switching stations. Electrical power is distributed to the post at 34.5 kilovolts (kV) through about 78 miles (126 km) of overhead lines and 83 miles (134 km) of underground lines. As of 2000, 10 substations were located throughout the installation to transform power to lower voltage. Fort Belvoir's electrical system, except for DCEETA, is undergoing privatization to upgrade their power system, which was initiated in 1998 (US Army Garrison Fort Belvoir, 1998a).

The proposed development is within a subarea that is served independently by DVP (US Army Garrison Fort Belvoir, 1998a). DVP provides electrical power to the proposed development area from the Beulah and William Woods substations are located 2,000 feet (610 m) northwest of the project area and distribute power at 4.16 kV through an underground distribution system (US Army Garrison Fort Belvoir, 2002c). Each substation delivers power from two 20 MVA transformers and provides the site with a firm power capacity. The current load is about 15 MVA, allowing capacity for increased loads in the future (US Army Garrison Fort Belvoir, 2000b).

3.7.6 Heating/Cooling

Fort Belvoir has four high-pressure and three low-pressure steam plants used for heating. The DCEETA facility has an individual boiler system with chiller plants located at UTB, Block K and William Woods. DCEETA's has a total heating capacity that is over 60 million BTU per hour, and the cooling capacity is over 9,000 tons [108 million British thermal units per hour (BTU/hr)]. There are no existing steam lines in the William Woods Road area. The closest heating and cooling units or lines are located at the UTB building approximately 2,800 feet (854 m) southwest of the proposed development (US Army Garrison Fort Belvoir, 2000b). District heat and air conditioning will not be used at the RDF site. The buildings will have gas fired water heaters and self-contained air-conditioning units.

3.7.7 Communications

The installation owns the entire communications system, including copper and fiber-optic cables, utility poles, and computerized switchboard systems. Most distribution cable is carried overhead on utility poles, while most fiber-optic cable is carried through an underground ductbank, along with some conventional cable. Telecommunication and information services on Fort Belvoir are supported by systems that transport, route, and process electronic voice data and images in telecommunications switches, campus cabling, manholes, and ductworks, building wiring for administrative telecommunications, and specialized Information Missions Area facilities, such as computer rooms and video teleconferences rooms (US Army Garrison Fort Belvoir, 1998a).

3.7.8 Solid Waste

The Fort Belvoir RCRA Solid Waste Management Study identified 238 solid waste management units (SMWUs) on the installation (US Army Garrison Fort Belvoir, 1992). Since 1992, Fort Belvoir has evaluated each of them and has prepared action plans for all the SWMUs on the Main Post and Engineer Proving Grounds (US Army Garrison Fort Belvoir, 2001b). There are no SWMU's in close proximity to the proposed RDF development area.

Fort Belvoir also has a 10-year integrated Solid Waste Management Plan (updated in 1999), which covers the DCEETA complex. The goal of the plan is to reduce solid waste management costs and potential environmental impacts. DCEETA's non-recyclable solid waste program is not a function Fort Belvoir's solid waste program. A civilian contractor hauler collects DCEETA's solid waste and disposes of it at a State-approved landfill off-post (US Army Garrison Fort Belvoir, 2001a). Special and universal waste, such as tires, used oil, paint and fluorescent lighting, batteries, pesticides, thermostats, mercury-containing equipment and scrap metal, is handled through Fort Belvoir ENRD in accordance with RCRA (40 CFR 273). The Hilltop Sand and Gravel operates a licensed construction debris landfill 1,300 feet (397 m) northwest of the William Woods Road intersection.

Several piles of abandoned utility equipment located at the abandoned National Bureau of Standards (NBS) site (Figure 2-1), would be removed and disposed during site cleanup prior to construction. In addition, two large 15-foot (4.6 m) high, grass-covered mounds of construction debris are in the same vicinity.

DCEETA operates an internal recycling program and does not participate in Fort Belvoir's mandatory post-wide Qualified Recycling Program (QRP). Through DCEETA's program, white and colored paper, newspaper, aluminum cans, tin/steel cans, scrap metal, cardboard, glass bottles, plastic containers, and toner cartridges is collected and disposed. In 2004, 5.3 tons (5.4 metric tons) of cardboard, 88 tons (89.8 metric tons) of scrap metal and 5 tons (5.1 metric tons) of commingled mixed paper to include aluminum, glass, plastic, and newspaper) was collected and separated off-site.

3.8 Socioeconomics

3.8.1 Demographics

Fort Belvoir is located in southern Fairfax County, Virginia (Figure 1-1). The Virginia counties of Prince William, Fauquier, Stafford, King George, Loudoun, and Arlington, and the city of Alexandria; the Maryland counties of Montgomery, Prince George's, and Charles; and Washington, DC are within a 30-mile (48 km) radius of Fort Belvoir. Fort Belvoir is thus part of a large and growing metropolitan area, with a 2000 population of over 4.2 million people. Fairfax County is the most populous of the jurisdictions in that area, accounting for almost 23 percent of the population. As of September 2004, the installation's land supports 2,070 family housing units and a working population of approximately 22,414 military, civilian and other employees. Fort Belvoir supports over 200,000 military personnel, dependents, and retirees in the region (US Army Garrison Fort Belvoir Website, 2005).

3.8.2 Age, Race and Ethnicity

Table 3-8 shows the racial and ethnic distribution of the nearest resident populations as counted in the 2000 Census of the US. The Fort Belvoir Census Designated Place (CDP) coincides with the boundaries of the Installation. CDPs are non-incorporated areas identifiable by name and with a sufficient density of population to justify singling them out for census purposes. Accotink Village is a residential enclave surrounded by Fort Belvoir on all sides but not associated with the installation. It is located 1.6 miles (2.6 k) south of DCEETA.

In order to show more recent population data, we have included Table 3-8a, showing data from the 2003 American Community Survey. This survey does not break out data for the Fort Belvoir CDP or Accotink Village. Instead, data for the 8th Congressional District (108th Congress) is presented; it is adjacent to Fort Belvoir, includes Accotink Village and other parts of Fairfax, and was included in the American Community Survey.

As depicted in Table 3-8, the Fort Belvoir CDP, Accotink Village, and Fairfax County are home to proportionally more non-white minorities than the state as a whole. More than half of the population of Accotink Village (210 out of 390 residents) belongs to a racial or ethnic minority. Table 3-8a shows little change in the racial and ethnic distribution of households from 2000 to 2003 in Virginia and Fairfax County.

Table 3-9 shows the proportion of persons under 18 living in each of the above jurisdictions. Only the Fort Belvoir CDP has a higher proportion of under-18 residents than the state as a whole, reflecting the presence of many military families housed on the post. US Census projections show the State of Virginia with 23.6 percent of population under 18 in 2030, as compared to 24.5 percent in 2000 -- no statistical difference. The populations in the other jurisdictions are not projected.

Table 3-8
Race and Ethnicity for 2000 (Percent)

Jurisdiction	White	Black¹	Other Non-White	Two or More Races	Total Non-White	Hispanic²
Fort Belvoir CDP	55.7	31.8	8.2	4.3	44.3	10.5
Accotink Village ³	46.2	37.4	12.1	4.3	53.8	7.9
Fairfax County	69.9	8.6	17.9	3.7	30.1	11
State of Virginia	72.3	19.6	6.1	2	27.7	4.7

Source: US Census Bureau Website, February 2005.

¹ Having origins in any of the black racial groups of Africa. ² Hispanic origin, may be of any race.

³ Block group 2 of census tract 4220.

Table 3-8a
2003 Total Population Estimate (Percent)

Race	State of Virginia	Fairfax County	8th Congressional District Virginia
White	72.7	70.4	70.7
Black or African American	19.3	8.6	13.3
Other Non-white race alone	6.4	19.4	13.9
2 or more races	1.7	1.7	2.1
Total population	100.0	100.0	100.0
Total non-white population	27.3	29.6	29.3

Source: US Census Bureau, 2003 American Community Survey

Table 3-9
Under-18 Population for 2000 (Percent)

Jurisdiction/Area	Population under 18
Fort Belvoir CDP	44.4
Accotink Village ¹	20.3
Fairfax County	25.4
State of Virginia	24.5

Source: US Census Bureau Website, February 2005.

¹ Block group 2 of census tract 4220.

3.8.3 Employment and Income

Based on Census 2000 results, Table 3-10 shows 1999 median household income, median family income, and the proportion of persons living in poverty for the Fort Belvoir CDP, Fairfax County, and Virginia as a whole. No Census 2000 data for these statistics are available for Accotink Village. However, Census 1990 data indicate that in 1989, the median household income in Accotink Village was \$16,719, as opposed to \$59,284 for Fairfax County and \$33,328 for Virginia as a whole. Thus, Accotink Village was significantly poorer than the surrounding jurisdictions. Fairfax County, however, is considered one of the most prosperous jurisdictions in the Washington, DC area, and even in the United States (US Army Garrison Fort Belvoir, 2002b).

The Virginia Employment Commission reported that Fairfax County, for December 2004, had a total civilian labor force of 584,880, and employment in the county was at 575,620. Unemployment was at 1.6 percent. The Commonwealth of Virginia as a whole, for the same period, had a civilian labor force of 3,817,300. Employment was at 3,701,228, and the unemployment rate was at 3.0 percent (Virginia Employment Commission Website, February 2005).

Table 3-10
Median Income and Poverty for 1999

Jurisdiction	Median Household Income (\$)	Median Family Income (\$)	Persons Living in Poverty (Percent)
Fort Belvoir CDP	39,592	39,107	5.6
Fairfax County	81,050 (2002=\$82,834)	92,146	4.5
State of Virginia	46,677 (2002=\$48,224)	54,169	9.6

Source: US Census Bureau Website, February 2005; VA Employment Commission Website, June 2005

3.9 Community Facilities and Services

3.9.1 Services

Safety and security issues at Fort Belvoir are handled by the Army's Military Police (MP) and Fire and Emergency Medical Services (EMS). The North Post MP station is at the intersection of Abbot Road and Gunston Road, 1.8 miles (1.13 km) south of the site. Five fire companies with a total staff of 66 firefighters serve the installation with at least 21 firefighters on duty 24 hours a day. The fire department fields three engines and one ladder truck (Sullivan, 2000, as cited in: US Army Garrison Fort Belvoir, 2002b).

Medical needs of military personnel and their dependents (and, in an emergency, civilian personnel) at Fort Belvoir are currently served by the DeWitt Army Community Hospital located in South Post. Base Realignment and Closure (BRAC) 2005 in late Fall 2005, will determine whether a replacement facility along John J. Kingman Road would be funded. Three additional dispensaries are located at Fort Belvoir; two near the residential areas and a third at Davison Army Airfield. There are 16 hospital/urgent-care facilities in Fairfax County and five others in nearby Arlington and Alexandria. After DeWitt Army Community Hospital, the nearest hospital to Fort Belvoir is INOVA Mount Vernon Hospital, a 232-bed facility about 5 miles (8 km) to the northeast (Fairfax County Website, February 2005).

The Fairfax County Fire and Rescue Department is a combined career and volunteer organization providing fire suppression, rescue, and EMS, among other functions. Those stations closest to Fort Belvoir are Woodlawn, Lorton, Gunston and Kingstowne (Fairfax County Website, February 2005). The closest station is the Kingstowne Station (37) at 7936 Telegraph Road, on the north side of Telegraph Road approximately 1,400 feet (427 m) southwest of William Woods Road intersection (Figure 1-3).

3.9.2 Recreational Facilities

Fort Belvoir offers 1,006 acres (407 ha) of recreational areas that are convenient to the population they serve. Facilities include three golf courses (North Post and South Post), officers and non-commissioned officers clubs, tennis courts, swimming pools, softball and soccer fields, etc. In addition, the Dogue Creek Marina rents boats and slips and dry-storage facilities. According to the Fort Belvoir Master Plan, the proposed future development of the Tompkins Basin Recreation Area would include many new recreational facilities, including basketball and tennis courts, baseball and soccer fields, a swimming pool, tent and recreational vehicle camp sites, rental cabins, and a lodge (US Army Garrison Fort Belvoir Website, February 2005).

Some of Fort Belvoir's undeveloped areas are open to recreational use: two wildlife refuges; fishing at Mulligan Pond and along Gunston Cove, Accotink Creek, Dogue Creek, and Pohick Creek; bow hunting in designated areas; bird watching, hiking, nature photography, and environmental education programs at the Accotink Bay Wildlife Refuge Education Center along the 10 miles (16 km) of trails.

The Fairfax County Park Authority operates 388 parks on more than 23,000 acres (9,315 ha). Facilities include 9 indoor recreational centers, nature and visitor centers, 8 golf courses, 5 nature centers, a horticulture center, a working farm, an activities/equestrian center, an indoor ice-skating rink, a skate park, a water park, campgrounds, and hundreds of athletic fields, tennis courts, picnic areas, playgrounds, historic sites and trails. A wide variety of activities and programs are operated at the county parks and recreational centers (Fairfax County Website, 2005).

3.10 Transportation and Traffic

3.10.1 Highway and Street Network

Four principal roadways define the Northern Virginia highway system in the vicinity of the site – I-95, Fairfax County Parkway (Virginia Route [VR] 7100), Richmond (Jefferson Davis) Highway (US 1), and Telegraph Road (VR 611).

Interstate 95, which is the major north-south travel route for traffic traveling along the East Coast through Northern Virginia, is located 1.5 miles (2.42 km) west DCEETA. Direct access to Fort Belvoir from I-95 is primarily via Fairfax County Parkway (Route 7100 via Exit 166) with alternate access points at Lorton Road (Exit 163) and US 1 (Exit 161). Fairfax County Parkway, a divided four-lane limited access highway, is the principal arterial public access route linking Fort Belvoir with I-95 and northern and western Fairfax County. US 1 is a major north-south transportation arterial that parallels I-95 in Northern Virginia. This highway links neighborhoods with commercial areas and serves regionally as an alternate corridor to I-95. In 2000, Telegraph Road carried approximately 17,000 vehicles per day in the vicinity of Fort Belvoir.

Telegraph Road is minor arterial road that traverses southwest-northeast through this part of Fairfax County. The highway connects the City of Alexandria with US 1. Telegraph Road is a four-lane divided highway that traverses the north and northwest boundary of Fort Belvoir and connects with Fairfax County Parkway (Route 7100) two miles (3.22 km) south of the proposed RDF site. It narrows to two lanes northeast of the Main Gate at Road B intersection and east of Fire Station 37, 1,400 feet (427 m) west of the William Woods Road Gate (Figure 3-1).

The Beulah Street entrance to Fort Belvoir off Telegraph Road is a major access point for Fort Belvoir and has been closed to all non-DoD traffic since September 11, 2001. Recent average daily traffic on Telegraph Road in the vicinity of the RDF project is summarized in Table 3-11.

Table 3-11
Average Daily Traffic on Telegraph Road

Year	AAADT	AAWDT	4-Whe	Bus	2-Axle	3-Axle	Trailer
2002	16,000	17,000	97%	0%	1%	1%	1%
2003	17,000	19,000	95%	1%	1%	2%	1%

AAADT= Average Annual Daily Traffic

AAWDT=Average Annual Weekday Traffic

Source: VDOT 2002,2003

The traffic presently entering and exiting DCEETA via the Main Gate at Road B include DCEETA employees, business visitors, and delivery vehicles. Delivery vehicles number about 10 fuel trucks per month, and about 25 non-fuel vehicles per day. Non-delivery vehicles (business visitors) number about 120 to 150 vehicles per day.

The William Woods Road Gate is closed at this time except in case of emergencies and the intersection has no traffic light or signage (Subchapter 4.10). Once the RDF becomes operational, all non-employees (visitors) and delivery trucks would enter the William Woods Road gate via a 300-foot (91.5 m) long dedicated right turn access lane on eastbound Telegraph Road. This lane would allow vehicles ample space to enter the gate and reduce traffic congestion at the intersection.

3.10.2 Existing Traffic Conditions

The description of existing traffic conditions in this section is based on the traffic impact analysis provided in the Environmental Assessment: *Construction of T-Block and Structured Parking at Defense Communications-Electronics Evaluation and Testing Activity* (DCEETA). The main DCEETA complex is the adjacent property to the southwest of the proposed RDF project area (Figure 1-3).

Traffic Volumes and Movement

The methodology used to estimate traffic volume (vehicle trips) is presented in detail in the DCEETA T-Block EA (Table 3-12).

- Telegraph Road and Beulah Street.
- Telegraph Road and the DCEETA's Main entrance at Road B off Telegraph Road.
- Telegraph Road and Newington Road.
- Northbound (NB) and Southbound (SB) ramps to the Fairfax County Parkway (FCP)

Table 3-12
Existing Traffic Volumes

Intersections	AM Peak Hour											
	NB			SB			EB			WB		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Beulah Rd/ Telegraph	8	48	26	317	368	191	243	1076	62	175	379	148
Newington Rd/ Snyder Rd/ Telegraph	0	0	3	207	0	11	41	1171	1	1	409	168
Road B/Telegraph	29	2	16	0	0	2	31	1053	334	68	671	28
NB Fairfax Co Pkwy /Telegraph Rd	13	3	209	-	-	-	297	854	-	-	340	167
SB Fairfax Co Pkwy /Telegraph Rd	-	-	-	147	0	217	-	1018	107	150	203	-

Table 3-12
Existing Traffic Volumes (continued)

Intersections	PM Peak Hour											
	NB			SB			EB			WB		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Beulah Rd/ Telegraph	60	341	146	110	46	417	381	531	10	36	954	279
Newington Rd/Snyder Rd/ Telegraph	0	0	2	289	0	41	54	631	0	0	1263	168
Road B/Telegraph	281	0	62	2	0	5	7	761	19	8	981	3
NB Fairfax Co Pkwy/ Telegraph	238	0	424	-	-	-	183	377	-	-	1004	124
SB Fairfax Co Pkwy/ Telegraph	-	-	-	165	0	413	-	395	26	320	922	-

Source: US Army Garrison Fort Belvoir, 2002b.

The analysis involved traffic counts during the Spring (March, April, and May) of 2002 at several intersections used by DCEETA employees to access the main DCEETA complex (Figure 1-3). Trip generation rates were developed for the new DCEETA T-Block employees and the Army Materiel Command (AMC) employees that were about to be relocated to Fort Belvoir at the time the EA was written (July 2002); distributing the new trips along the access routes to DCEETA (the distribution was made by surveying commuting patterns among the existing workforce); and adding these numbers to the actual traffic counts to develop peak-hour movements at affected intersections. Both the T-Block addition and the AMC relocation/consolidation have occurred, so that the vehicle trips generated by those two actions, in addition to the 2002 traffic counts, are a good representation of existing conditions. The closest intersections to the proposed realignment are:

Volume-to-Capacity Ratio

The numbers in Table 3-13 were used to generate a "level of service" (LOS) analysis. An LOS analysis is an assessment of traffic conditions, based on the average delay per vehicle that describes the quality of traffic flow as perceived by motorists.

The flow of traffic is a function of traffic volume and available roadway capacity. The standard industry procedures for determining the volume-to-capacity ratio (V/C) ratio of any roadway facility are provided in the 1997 Highway Capacity Manual (HCM), which outlines procedures for assessing the adequacy of signalized, two-way, and four-way stop-controlled intersections (US Army Garrison Fort Belvoir, 2002b). The procedures take into account the number of vehicles turning or proceeding straight through the intersection, the number of lanes provided for each turning movement, and the likely conflicts among turning vehicles. For signalized intersections, conflicts are quantified through the calculated "critical lane volume." The critical

lane volume is divided by the intersection capacity to obtain a V/C ratio. Significant V/C thresholds are summarized in Table 3-13. Table 3-14 shows existing LOS conditions for the nearest intersections to the proposed action. All intersections operate well below capacity.

Table 3-13
Level of Service Criteria (LOS) for Signalized Intersections

V/C Ratio	Assessment	Description
<0.85	Under capacity	Stable flow, slight delays
0.85-0.95	Near capacity	Approaching unstable flow, acceptable delays
0.95-1.00	At capacity	Unstable flow, congested, unacceptable delays
>1.00	Over capacity	Forced flow, oversaturation

Source: Transportation Research Board, 1997, in: US Army Garrison Fort Belvoir, 2003b.

Table 3-14
Signalized Intersection Levels of Service (LOS) - Existing Conditions

Signalized Intersections	AM		PM	
	V/C Ratio	Capacity Status	V/C Ratio	Capacity Status
Beulah Rd/Telegraph Rd	0.67	Under capacity	0.76	Under capacity
Newington Rd/Snyder Rd/Telegraph Rd	0.57	Under capacity	0.70	Under capacity
Road B/Telegraph Rd	0.41	Under capacity	0.51	Under capacity
NB Fairfax Co Pkwy Ramps/Telegraph Rd	0.45	Under capacity	0.57	Under capacity
SB Fairfax Co Pkwy Ramps/Telegraph Rd	0.51	Under capacity	0.64	Under capacity

Source: TransCore, 2002, in: US Army Garrison Fort Belvoir, 2002b.

¹V/C Ratio = Volume-to-Capacity Ratio

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4 IMPACTS OF THE PROPOSED ACTION AND ALTERNATIVES

This chapter provides an assessment of the potential environmental impacts that would result from the construction and operation at the Defense Communications–Electronics Evaluation and Testing Agency (DCEETA) of: a new entry point for delivery and visitor vehicles accessing the DCEETA complex; a Remote Delivery Facility (RDF); and, the widening of DCEETA's east perimeter road. In performing this environmental assessment, the short and long-term environmental impacts of the Proposed Action Alternative and No Action Alternative were evaluated.

This chapter is organized similar to Chapter 3. Subchapters 4.1 through 4.10 address the impacts on specific resources. Subchapters 4.11 through 4.17 address antiterrorism/force protection requirements; cumulative impacts; unavoidable adverse impacts; mitigation measures of impacts; the relationship between local short-term uses of the environment and the enhancement of long-term productivity; and irreversible and irretrievable commitments of resources.

4.1 Impacts on Land Use, Plans, Aesthetics and CZM

4.1.1 Proposed Action Alternative

Implementation of the Proposed Action Alternative would be consistent with current land use patterns and the Fort Belvoir Master Plan (US Army Garrison Fort Belvoir, 1993). The Master Plan for the Upper North Post Planning District includes areas designated for recreation, administrative and research and development uses, as well as a supply storage area. The project area is within a planning district designated for research and development. The planning district overall is less than 20 percent developed because of the substantial amount of land set aside for the Forest and Wildlife Corridor (FWC), wetlands, and stream valleys.

Small, localized changes in land use would occur on-post; off-post land uses would remain unaffected. The overall proposed entry point and RDF site is 15.6 acres (6.3 hectares [ha]), characterized primarily by forest cover. Approximately 1.7 acres (0.69 ha) of the site was previously disturbed by construction and operation of the abandoned NBS site. Of this, 4.57 acres (1.85 ha) would change from undeveloped use to administrative, transportation and storage use; 0.3 acres (0.12 ha) would be restored to native tree cover.

The widening of the perimeter road would impact 7.6 acres (3.08 ha) of undeveloped land, largely wooded, along the inside margin of the existing east perimeter road, which would be permanently changed to widen the roadbed. Approximately 2.58 acres (1.03 ha) along the west side of the perimeter roadway would be temporarily disturbed during construction of the roadbed and site utilities. The temporarily disturbed area would be reseeded and replanted with native trees, once construction was complete.

The new entry, RDF and perimeter road widening would cause a long-term change in the land uses of the areas permanently affected. Although construction of the RDF would increase the total amount of impermeable surface, it would not exceed the Fort Belvoir Master Plan goal of covering no more than 20 percent of a lot with pavement and structures.

Implementation of the Proposed Action Alternative would cause short-term changes to the viewscape south of Telegraph Road. During construction, drivers along Telegraph Road would witness minor disturbance at the William Woods Road Gate. This disturbance would be short term (about two months). The long-term viewscape south of Telegraph Road would maintain the existing 200-foot (61 m) tree buffer, which would block the drivers' view of the RDF facility.

The Army plans to follow National Capital Planning Agency Guidelines policies regarding 1) use innovative energy conserving techniques; 2) the design of security barriers and checkpoints at vehicular entry points to accommodate vehicular queuing on site and to avoid adverse effects on adjacent public roadways operations and safety; 3) an installation parking ratio of one space for every 1.5 employees; and 4) conservation of park, open space, and natural areas (National Capital Planning Commission, 2004). The design for the project would:

- 1) Incorporate LEED/SPiRiT measures.
- 2) Meet AT/FP requirements by providing security screening away from the DCEETA workforce. The initial screening would begin as drivers approach the William Woods Road Gate from the Telegraph Road intersection.
- 3) Provide a second ingress/egress into the DCEETA complex and an onsite queuing for visitor vehicles and fuel / non-fuel delivery trucks, thus removing these vehicles from the existing DCEETA employee vehicle back-up that occurs at the Main Gate at Road B (Figure 3-1).
- 4) Not conflict with parking requirements. The Proposed Action Alternative would not involve an increase in personnel. The proposed 11,180 sq. ft. (1,039 m²) of new parking area would accommodate non-DCEETA employee visitors and delivery trucks only.
- 5) Conserve considerable open space by avoiding impacts to the extent practicable on the FWC, RPA and stream valleys.

As outlined in Subchapter 3.1.2, DCEETA has adopted LEED and SPiRiT pursuant to Executive Order 13148 (Chapter 7), and applies LEEDs and SPiRiT concepts and practices to encourage innovative planning, design, construction, and maintenance of new facilities. As the plans for the RDF are further developed, DCEETA will look at ways that LEEDs and SPiRiT practices can be incorporated in the buildings and overall site design.

Fort Belvoir is adjacent to the tidal portion of Potomac River and therefore, within the Virginia coastal zone. Pursuant to Section 307 of the Coastal Zone Management Act of 1972, as amended, the Army is required to determine the consistency of its activities affecting Virginia's coastal resources or coastal uses with the Virginia Coastal Resources Management Program (VCRMP).

The Proposed Action Alternative is consistent to the maximum extent practicable with the VCRMP. A Federal Consistency Determination was prepared for the proposed project (Chapter 6 – Appendix A).

4.1.2 No Action Alternative

Implementation of the No Action Alternative would result in not constructing the RDF and would maintain the entry and east perimeter road as it exists today. The No Action Alternative would generate no impact that would require a permit from the Commonwealth of Virginia core regulatory programs pertinent to the CRMP, and would have no effect on coastal zone resources. The No Action Alternative would, however, lead to continued non-compliance with AT/FP requirements, and expose DCEETA employees to unnecessary risk from terrorist actions.

4.2 Impacts on Natural Resources

4.2.1 Physiographic Impacts

4.2.1.1 Proposed Action Alternative

Implementation of the Proposed Action Alternative is not expected to affect the geological formations or geomorphology in the site's vicinity. Although the proposed construction would not require deep excavation, it would require clearing and grading of a total of 23.2 acres (9.4 ha) for construction of the new entry/RDF, and widening of the perimeter road, resulting in long-term impact on topography and soils, with resulting changes in soil infiltration and surface runoff patterns (Subchapter 4.2.2). Surface infiltration rates are usually higher in topsoil than in the subsoil, and less runoff occurs. Grading for the RDF and new entry point facilities would alter slopes and soils. Buildings and pavements would reduce infiltration.

The predominant soils to be affected in the entry/RDF area are Mattapex, Dragston, and Lunt soil series – all characterized as having a severe erosion potential. The contractor would be required to implement an erosion and sedimentation control plan, including uses of best management practices, such as staging construction to minimize the amount of soil exposed at any one time, to reduce construction impacts (Subchapter 4.14).

The east perimeter road widening would have less impact on the existing topography. The new road base, easement, and ditch would occur on level ground that lies adjacent to the existing roadbed. The expansion would impact soil series that were previously disturbed during construction of the existing perimeter road.

4.2.1.2 No Action Alternative

Under the No Action Alternative, there would be no short or long-term adverse impact on existing physiographic resources.

4.2.2 Impacts on Water Resources

4.2.2.1 Proposed Action Alternative

Implementation of the Proposed Action Alternative would create minor short and long-term impacts on the stream resources (Subchapter 3.2.2.2). Clearing, grading, and excavation during construction could produce short-term direct impacts to surface water flow and quality. During heavy rainfall, the increased sediment-laden runoff into swales would be transported downstream into the Dogue Creek watershed (Subchapter 4.7.3). Best management practices (BMPs) to control erosion and sedimentation during construction would minimize impacts on the water quality of Dogue Creek and its tributaries (Subchapter 4.14). The permanent increase in impermeable surface from proposed construction would, over the long term, increase surface water runoff. Compliance with Chesapeake Bay Preservation Area requirements, namely maintenance of a RPA buffer and provision of nutrient control best management practices in the RMA, would minimize these impacts.

Buildings and paved surfaces reduces infiltration of surface water through soils to the water table, however, this would have little impact on existing groundwater resources. No withdrawal of groundwater would be necessary for the proposed development. The small amount of project acreage in conjunction with implementation of passive storm water management controls, such as vegetated swales make the size of the recharge area for any shallow, unconfined aquifer insignificant. The proposed construction does not cross any Middle and Lower Potomac Formation recharge areas. Wells in Fort Belvoir are only used for irrigation. The confining units for the Middle and Lower Potomac should be adequate to protect these aquifers from vertical migration of contaminated groundwater through subsurface water percolation (Chapter 6 - Appendix C).

4.2.2.2 No Action Alternative

Under the No Action Alternative, there would be no short or long-term adverse impact on water resources.

4.2.3 Impacts on Environmentally Sensitive Areas

4.2.3.1 Proposed Action Alternative

Environmentally sensitive areas on Fort Belvoir include: a forest and wildlife corridors, floodplains, wetlands, wildlife refuges, steep slopes, stream valleys, mature forests and Chesapeake Bay RPAs (Chapter 3.2.3). Of these, wetlands, steep slopes, and stream valleys occur in the project area. Forest at the proposed entry point / RDF site and along the route of the perimeter road is not mature and not considered a sensitive area. The two wildlife refuges occur more than a mile from the Proposed Action Alternative site, and the forest and wildlife corridor is 4,000 feet (1,220 m) south of the proposed project.

During design of the project, different layouts were evaluated, in an attempt to reduce the impacts of the proposed facilities on the streams, stream valleys, wetlands, and RPAs. Figures 3-2, 3-3, and 3-4 show the current plan's impacts on wetlands, RPAs, and streams/floodplains with stream valley impacts generally associated with stream impacts. This plan represents the alternative layout with the minimum impacts on these resources. Under this plan, roadway/utility line crossings would still impact one jurisdictional palustrine forested wetland and three narrow jurisdictional stream (bed and bank) wetlands. The east perimeter road widening would impact one jurisdictional palustrine forested wetland and seven narrow jurisdictional bed and bank-type streams.

The proposed RDF project would involve the filling or alteration of approximately 0.03 acres (0.012 ha) of bed and bank and 0.20 acres (0.08 ha) of vegetated wetland, while the perimeter road widening would impact 0.12 acres (0.049 ha). Wetland impacts would likely be authorized under the US Army Corps of Engineers Nationwide Permits, their State Program General Permit (SPGP), and the Virginia DEQ wetland general permits. For utility crossings of streams and wetlands, Fort Belvoir would apply for US Army Corps of Engineers Nationwide Permit 12, which regulates "activities required for the construction, maintenance, and repair of utility lines and associated facilities in "waters of the US." Roadway crossings would likely be covered under the SPGP. Fort Belvoir would comply fully with all permit conditions.

The RDF facility would involve a total encroachment of 2.04 acres (0.83 ha) of RPA, while widening the perimeter road would encroach 0.50 acres (0.20 ha). Construction of public roadways and utility lines is normally considered exemption under Chesapeake Bay Local Assistance Department and Fairfax County rules. While the perimeter road is not "public" in the sense that it is not available to the general public, it is a "public" roadway in terms of its use by the DCEETA workforce. Any utility lines collocated with the road or connecting to the RDF and entry point facilities would be exempt. The encroachment by the proposed PPA / CC would likely be covered by a "Loss of Buildable Area" waiver or special exception under the Fairfax County Chesapeake Bay rules.

4.2.3.2 No Action Alternative

Under the No Action Alternative, there would be no short or long-term adverse impact on environmentally sensitive areas.

4.2.4 Impacts on Vegetation and Wildlife Habitats

4.2.4.1 Proposed Action Alternative

Implementation of the Proposed Action Alternative poses minor short-term and long-term impacts on vegetation and wildlife habitats on Fort Belvoir. Direct, short-term impacts during construction would include loss of vegetation and displacement of larger animal species, such as deer and fox. Smaller mammals, reptiles and amphibians may be displaced during construction, but ultimate loss of habitat would result in fewer animals.

Clearing and grading of the RDF would permanently alter 15.6 acres (6.3 ha) of the existing land cover comprised of second growth upland 40-year-old Tulip Mixed Hardwood (TMH) forest; another 0.5 acres (0.2 ha) of area would be disturbed, but would be reseeded and restored with native tree and grass cover. Because approximately 1.7 acres (0.69 ha) of this impacted acreage was previously disturbed by construction and operation of the abandoned National Bureau of Standards (NBS) site (Figure 2-1), the RDF would result in the long-term loss of approximately 13.9 acres (1.93 ha) of the TMH habitat. A portion of this disturbed area within the NBS site would undergo a restoration of vegetation through the planting of native plants.

Widening of the perimeter road would permanently impact 7.6 acres (3.08 ha) of TMH, LPF, and VPF forest, and would temporarily impact 2.58 acres (1.03 ha) of these same cover types. The perimeter road is adjacent to areas that have also been disturbed previously, and the loss of forest area would occur at the edge of forest stands. This would lessen the potential impact on the integrity of the forest community.

Four of the Partners of Flight (PIF) species observed during avian monitoring study (Subchapter 3.2.4) conducted by Fort Belvoir's Environmental Natural Resource Division (ENRD) staff are located within a forest canopy dominated by Virginia Pine Forest (VPF). The RDF site is located within a forest canopy dominated by a mixed Tulip Popular Mixed Hardwood (TMH) / Beech Mixed Oak (BMO) and is distinctively different than the VPF found at the PIF sites. The perimeter road widening occurring within DCEETA's southeast quadrant is within a coniferous forest canopy of mixed VPF / Loblolly Pine Forest (LPF), with a vegetative habitat that is similar to the PIF sites. The marginal decrease of vegetative habitat resulting from the perimeter road widening would have minimal long-term impact on the total available breeding habitat for the PIF breeding species. However, the distribution of these breeding species may be altered.

The wildlife habitat in the vicinity of the RDF is overall of moderate quality, and the species present are tolerant of human presence and activity. Loss of habitat, such as food, cover, and nesting areas over the long term would have a minor on wildlife through displacement, loss of habitat and increased competition. Construction would not adversely affect habitats outside the perimeter fence. An increase sediment-laden runoff will have direct, short-term impact on aquatic biota during construction.

Use of fertilizers and pesticides on the new site could cause long-term increases in nutrient and pesticide concentrations for aquatic biota in Dogue Creek. Fort Belvoir personnel would use Integrated Pest Management procedures, which limit use of pesticides near surface waters. They generally use slow-release fertilizers to minimize excess nutrients reaching waterways. In the long-term, vegetated buffers adjacent to the streams/drainage swales would reduce pollutants before they reach these waterways.

4.2.4.2 No Action Alternative

Under the No Action Alternative, there would be no short or long-term adverse impact on vegetation and wildlife habitat.

4.2.5 Impacts on Threatened and Endangered Species

4.2.5.1 Proposed Action Alternative

Implementation of the Proposed Action Alternative is not expected to affect any federal or state listed rare, threatened and endangered species, or their critical habitats (Subchapter 3.2.5). Based on the project site review, vegetation surveys summarized in Fort Belvoir's INRMP (US Army Garrison Fort Belvoir, 2001b), and reconnaissance of the project area, potential habitats of the small-whorled pogonia, wood turtle, Northern Virginia well amphipod, or any other state- or federally-listed rare plant, rare, threatened or endangered species are not within the proposed project area.

Under Section 7 of the Endangered Species Act of 1973 (as amended) if any protected species, to include federal or state listed species, or their critical habitats are sighted or will be impacted by the construction and operation of the RDF, immediate suspension of activities will occur and the DNH, the VADGIF, and the USFWS, as well as the Virginia Department of Agricultural and Consumer Services (VDACS) will be notified. Work will be suspended until the Section 7 consultation process has been completed.

4.2.5.2 No Action Alternative

Under the No Action Alternative, there would be no short or long-term adverse impact on rare, threatened and endangered species.

4.3 Impacts on Cultural Resources

4.3.1 Proposed Action Alternative

A Cultural Resource Assessment of the proposed RDF and Perimeter Road project areas (JMA, 2005a) and a Phase II Evaluation of two sites adjacent to the Perimeter Road (JMA, 2005b) determined that only archaeological site 44FX459 to be potentially eligible for the National Register of Historic Places (NRHP) and would therefore require further study. A Phase II Archaeological Assessment will be conducted on this site in the near future and if determined eligible for the National Register and potential impacts to this site will be mitigated as required by the NHPA. This work will also define the limits of the Potter-Milan Cemetery to aid in avoidance of all graves.

4.3.2 No Action Alternative

Under the No Action Alternative, there would be no short or long-term adverse impact on cultural resources.

4.4 Impacts of Hazardous Substances

4.4.1 Proposed Action Alternative

Implementation of the Proposed Action Alternative would result in a short-term increase in the use of hazardous materials and generation of hazardous wastes from the operation of construction equipment. During construction there would be a small potential for soil contamination from motor oils, hydraulic oils, and gasoline and diesel fuels as a result of construction vehicle repair, maintenance and fueling. Potential hazardous waste contaminants and contaminated soils would be manifested through ENRD excavated and disposed of in accordance with state and federal regulations. If a spill or an accidental release occurred, the Fort Belvoir Master Spill Plan would be followed and ENRD would be notified for evaluation. Placement of temporary USTs for construction purposes would follow the tank permit requirements of the Master Spill Plan.

In the long term, the potential for surface water contamination from gasoline / fuel oil delivery truck leaks or spills could result from operating the bulk fuel delivery, storage and distribution system at the RDF. To minimize this potential, the spill prevention and control measures stated in an updated Fort Belvoir Master Spill Plan would be maintained (Subchapter 4.14). This plan would reflect safeguards to prevent, detect and contain fuel leaks and spills, as well as proper procedures for parking, fueling and maintenance of vehicles during construction, as well as proper operating procedures during unloading of fuel delivery trucks.

4.4.2 No Action Alternative

Under the No Action Alternative, there would be no short or long-term adverse impact on the production of hazardous substances.

4.5 Impacts on Air Quality

The following air-quality analysis includes General Conformity applicability and a discussion of microscale CO concentrations resulting from potential changes in local traffic patterns for the Proposed Action and No Action Alternatives. Air-quality impacts would be considered significant if the anticipated emissions:

- Exceed specified O₃ precursor rates for moderate nonattainment for the 8-hour O₃ standard.
- Are "regionally significant."
- Contribute to a violation of Fort Belvoir's Title V Permit.

- Introduce localized CO concentrations (“hot spots”) greater than the National Ambient Air Quality Standards (NAAQS).

4.5.1 Proposed Action Alternative

Implementation of Proposed Action Alternative would have a minor, temporary impact on local air quality. However, air emissions are not expected to exceed O₃ precursor rates for moderate nonattainment areas, be “regionally significant,” contribute to a violation of Fort Belvoir’s Title V Permit, or introduce localized CO concentrations greater than the NAAQS.

4.5.1.1 Conformity Determination

To determine the applicability of the general conformity rule, emissions from construction and proposed stationary point sources were estimated for the proposed action and compared to the de minimis rates and 10 percent of the Air Quality Control Region (AQCR) 47 total emissions. The analysis included estimating equipment use for site preparation (earthworks), construction, paving and landscaping for:

- Construction of the new buildings associated with the proposed RDF, including the explosives detection area (EDA), the personnel processing area and conference center (PPA/CC), the delivery screening area (DSA), and the shipping and receiving warehouse, a security guard’s kiosk, and the fuel unloading and gasoline dispensing systems.
- Construction and modification of roadways.
- Construction of foot trails.
- Widening of a 1.6-mile (2.6 km) portion of the existing east perimeter road.

Table 4-1
Construction Emissions Compared to Applicability Thresholds

Criteria Pollutants	Applicability Threshold (tpy)	Total Construction Emissions (tpy)	Exceeds Applicability Threshold
NO _x	100	5.50	No
VOCs	50	1.48	No

tpy = tons per year

Table 4-2
Construction Emissions Compared to AQCR 47 Total Emissions

Criteria Pollutants	AQCR 47 Total Emissions (tpy)	Total Construction Emissions (tpy)	Percent Total	Regionally Significant
NO _x	117,384	5.50	0.02%	No
VOCs	178,485	1.48	0.03%	No

* Source: MWCOG 2003, 2005 Projected Levels

Note: tpy=tons per year

Detailed methodologies for estimating air emissions and Records of Non-Applicability (RONA) to the General Conformity Rule for the proposed action in Chapter 6 – Appendices B and C, respectively. Due to its limited size and scope, the estimated emissions from the Proposed Action Alternative would not exceed *de minimis* and would not make up 10% or more of regional emissions for VOCs or NO_x (Tables 4-1 and 4-2). Therefore, the general conformity rule does not apply and no conformity determination is needed.

4.5.1.2 Title V

Fort Belvoir is classified as a “major source” because it has actual emissions of nitrogen oxides (NO_x) greater than 25 tons (25.5 m tons) per year and potential emissions of several other criteria pollutants greater than 100 tons (102 m tons) per year. Therefore, Fort Belvoir operates under a Title V Air Permit (# NVRO70550). This permit was issued on 21 March 2003 (VDEQ, 2003). Increases due to the Proposed Action Alternative would not significantly contribute to a violation of the Title V permit (Table 4-3).

One 100 kW emergency generator and three small rooftop natural gas heating units will be installed at the proposed facility. These ‘insignificant emission units’ (9 VAC 5-80-720) will be identified in the Title V application. These emission units are presumed to be in compliance with all requirements of the federal Clean Air Act as may apply. These units are exempt from new stationary source air quality permit requirements (9VAC5-80-1320) and do not subject Fort Belvoir to non-attainment New Source Review. There would be no anticipated changes in the total on-post throughput with the construction of the new fuel unloading and gasoline dispensing systems because they would replace existing systems. Therefore, no significant changes in emissions due to fuel storage and transfer are expected.

Fort Belvoir’s Title V permit does not outline specific base-wide limitations on construction emissions of criteria pollutants. Although no specific limitations are indicated, Fort Belvoir’s Title V permit and Virginia’s Administrative Code (9 VAC 5-40-90 and 9 VAC 5-50-90) require reasonable precautions to prevent particulate matter from becoming airborne. Such reasonable precautions may include, but are not limited, to the following:

- Use, where possible, of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads, or the clearing of land;
- Application of water, or suitable chemicals on dirt roads, materials stockpiles, and other surfaces which may create airborne dust; the paving of roadways and the maintaining of them in a clean condition;
- Installation and use of hoods, fans, and fabric filters to enclose and vent the handling of dusty material. Adequate containment methods shall be employed during sandblasting or other similar operations;

- Open equipment for conveying or transporting material likely to create objectionable air pollution when airborne shall be covered or treated in an equally effective manner at all times when in motion; and
- The prompt removal of spilled or tracked dirt or other materials from paved streets and of dried sediments resulting from soil erosion.

4.5.1.3 Transportation Emissions and Localized CO Concentrations

Localized carbon monoxide concentrations are of concern for increased use of gasoline and diesel-powered motor vehicles. Implementation of the Proposed Action Alternative would result in a reduction in vehicular traffic congestion and therefore, minor long-term reductions in localized CO concentrations for intersections near the William Woods Road Gate (Table 4-3). This constitutes a slight improvement in local air quality conditions. The proposed action is not expected to cause long-term increases of other criteria pollutants, such as O₃, Pb, SO₂, VOCs and NO_x (USDOT, 1986).

Table 4-3
Estimated Future Localized Carbon Monoxide at Nearby Locations Compared to Existing Conditions

Location	One-Hour Concentration (ppm)		Eight-Hour Concentration (ppm)	
	Existing	Future	Existing	Future
Telegraph Road between Road B and William Woods Road Gates	8.7	8.6	5.0	4.8
Telegraph Road and the Road B Gate	8.8	8.7	5.0	4.9

¹ CO levels include background concentrations of 6 ppm (one-hour) and 3 ppm (eight-hour).

4.5.2 No Action Alternative

Selecting the No Action Alternative would result in no changes in ambient air-quality conditions. No construction activities would be undertaken and no changes in operations or traffic would be expected. Localized CO levels would remain as those predicted under existing conditions.

4.6 Noise Impacts

4.6.1 Proposed Action Alternative

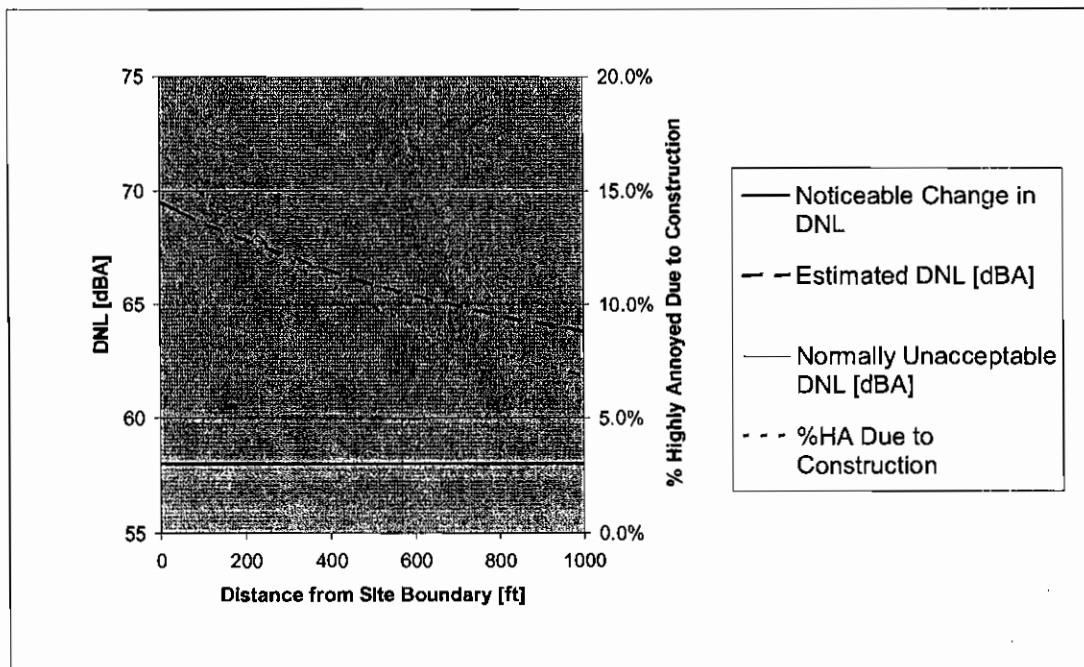
Construction and facility operation noise impacts would be considered significant if there were long-term increases in the number of people highly annoyed by the noise environment; noise associated adverse health effects to individuals; or, unacceptable increases to the noise environment for sensitive receptors. A sensitive receptor is any person or group of persons in an environment where low noise levels are expected, such as schools, daycares, hospitals, and nursing homes.

Construction Noise

Implementation of the Proposed Action Alternative would have a minor temporary impact on the noise environment. The use of construction equipment (soil moving equipment, heavy trucks, and additional light construction equipment) would contribute to an increase in noise within the immediate project area while construction was underway. Overall construction noise was estimated based on typical period of use and mechanical load (Thalheimer, 2000).

During construction, the estimated distance necessary to attenuate the overall noise environment to a level compatible with most land uses (Subchapter 3.6) is 700 feet (214 m). No sensitive receptors are located within 700 feet (214 m) of the site boundary; therefore, no sensitive receptors would experience a significant change in their overall average noise environment during construction (Table 4-4). Construction equipment may be audible at distances greater than 700 feet (214 m) from the project site boundary, and could have momentary effects on speech intelligibility, but these moments would be brief and would not cause a noticeable change in the average noise environment. Due to the times of construction site operations, no sleep awakenings are expected.

Table 4-4
Distance from Site Boundary vs. Day Night Sound Level and Percent Highly Annoyed Due to Construction Noise



Construction noise would be perceptible and would dominate the soundscape for all on-site personnel during the construction period. Construction workers, and particularly equipment operators, would be required to use adequate personal hearing protection to limit exposure and ensure compliance with federal health and safety regulations.

Operational and Traffic Noise

Only a few noise sources would be associated with long-term operation of the RDF, namely on-site equipment, visitor cars, and delivery trucks. On peak days, such activities would be expected to generate noise levels of about 56 dBA at the RDF itself. This is based on a likely maximum of two large (18-wheeler) trucks idling at the entry screening area or EDA. Noise from the trucks would dominate other noise sources. The 56 dBA levels would be consistent with, or less than, the current ambient noise levels in the area.

The FHWA Traffic Noise Model (TNM), Version 1.1 was used to estimate future sound levels due to changes in vehicular traffic along Telegraph Road for non-government receptors near the Proposed Action (Table 4-5). These receptors have been identified as those closest to the roadway between the DCEETA main gate at Road B and the William Woods Road Gate, and can be considered the "worst case" in terms of potential noise exposure. Increases in sound levels of less than 3 dB are not noticeable to most people, thus the predicted changes would not be noticeable. The estimated future sound levels are compared below to existing levels and FHWA noise abatement criteria.

Table 4-5
Predicted Noise Levels for Receptors on Telegraph Road

Receiver	NAC Category	DNL Criteria	Existing (2003)	After Proposed Action	Change (F/S)	Noise Impact
Golf Course 60 m from centerline	B	67	60.1	60.4	+0.3	No
Two Residences 48 m from centerline	B	67	61.5	62.2	+0.7	No

Implementation of the Proposed Action Alternative would be a short-term increase in noise impacts due to construction, such as clearing, excavation, grading and building/roadway construction and a long-term increase due to delivery truck activity. Construction noise levels at a given receptor location would depend on the type and number of pieces of equipment operated and the receptor's distance from the construction site. Construction activities would generate noise impacts of short duration that would be similar to other construction projects in the area. Construction traffic would be limited to daylight hours to reduce noise stress and annoyance to residents.

Because construction would occur over a limited time period, related noise and vibration impacts are considered moderate and temporary in nature, and, therefore, acceptable. Some work may be allowed on Saturday, if necessary due to unusual inclement weather or extraordinary circumstances. Potential increased noise levels would be short-lived, lasting only as long as the proposed project construction schedule.

In addition, small noise level increases along the truck routes would be expected as a result of delivery truck operation. This would be limited in extent and duration with delivery vehicles traveling between the site and Fairfax County Parkway. Because the RDF is a command facility, a slight noise impact would occur as a result of running emergency generators during power outages and movement of large trucks during daylight hours. Normally, no adverse noise sources would be associated with the operation of the facility.

The Hayfield High and Elementary Schools and an adjacent subdivision are located 3,200 feet (976 m) northeast of the proposed development. At this distance, operating machinery and delivery trucks would not annoy residents. No long-term increase in traffic noise would result from the Proposed Action Alternative.

4.6.2 No Action Alternative

Under the No Action Alternative there would be no short or long-term adverse impact on the ambient noise levels.

4.7 Impacts on Infrastructure and Utilities

Implementation of the Proposed Action Alternative would result in short-term disconnections and reconnections of buried and aboveground infrastructure items, such as phone, fiber-optics, electrical lines and storm water, wastewater and potable water supply lines principally along Telegraph Road. With addition of office building and operations space, there would be a requirement for additional infrastructure services, such as potable water, sanitary sewer, storm water, communications, and electrical, heating and cooling, and solid waste disposal. There is no anticipated increase in personnel that would be required to operate the RDF.

4.7.1 Potable Water Supply

4.7.1.1 Proposed Action Alternative

The total anticipated water demand is 6,925 gallons (26,318 liter) per minute for a 12-hour day with a peak flow for system design of 576 gallons (2,189 liters) per minute. Total flow requirement is 2,646 gallons (10,055 liters) per minute, which is 2,070 gallons (7,866 liters) per minute with the water system designed to provide a maximum water flow of 2,800 gallons (10,640 liter) per minute, which can be serviced through an existing 12-inch (30-cm) water main (Subchapter 3.7.1). The incoming water for the RDF site is fed by downslope gravity from the newly installed water tank, 2,200 feet (671 m) to the west. The anticipated water demand at the RDF would be offset by an equivalent decrease in demand elsewhere on the main DCEETA complex. The Proposed Action Alternative would change the installation's potable water infrastructure, but would not change the long-term demand.

4.7.1.2 No Action Alternative

Under the No Action Alternative, there would be no short or long-term adverse impact on the installation's potable water distribution system.

4.7.2 Sanitary Sewer

4.7.2.1 Proposed Action Alternative

Average daily wastewater flow as a result of the RDF operation would be offset by a decrease at elsewhere in the main DCEETA complex. Therefore, only a slight increase sewage output by 0.12 cubic feet (0.003 cubic m) per second (CFS) would occur. Therefore, the anticipated wastewater increase for the proposed development area is minimal. The Proposed Action Alternative would have negligible impact on the installation's sanitary sewer system.

4.7.2.2 No Action Alternative

Under the No Action Alternative, there would be no short or long-term adverse impact on the installation's sanitary sewer system.

4.7.3 Storm Water

4.7.3.1 Proposed Action Alternative

Fort Belvoir complies, to the extent practicable, with both the Commonwealth of Virginia and Fairfax County storm water codes, both of which require management of both quantity and quality of storm water (Subchapter 4.14) through best management practices (BMP's). Construction of the Proposed Action Alternative would have short-term impact on DCEETA's storm water drainage system with an increase in surface water runoff that would impact water flow characteristics, increase sediment discharge and reduce surface water quality downstream in the Dogue Creek watershed.

Of the 23.2 acres (9.4 ha) to be cleared and graded, 9.44 acres (3.9 ha) would be impervious surface area, such as parking areas, roadways, truck turnarounds, sidewalks, and buildings, would be added to the current drainage area. The RDF site would add 4.57 acres (1.85 ha) impervious surface while the perimeter road widening would add 4.87 acres (1.97 ha). All three projects would increase total impervious surface within the Piney Run subwatershed by less than 0.2 percent and the Dogue Creek watershed by 0.4 percent. Approximately 3.08 acres (1.25 ha) would be restored through landscaping, of which 0.3 acres (0.12 ha) lies within the entry point and RDF area and 2.58 acres (1.03 ha) along the west side of the perimeter road (Figure 3-2).

The existing impervious surface area within the proposed 40.17 acres (16.26 ha) drainage area for the RDF site is less than 4 percent based on the comparison of calculated pre-development versus post-development non-point source pollutant runoff load established in the Virginia

Storm Water Management Handbook (VSMH). Based on VSMH criteria, only Phase III (Subchapter 2.1.5) would require reduction in pollutant discharge after development through implementation of water quality BMP's (Table 4-6).

After Phase II construction of the proposed warehouse, controlled passageway, hazardous material building and loading dock approach the percent impervious cover (PIC) would increase from 11.43 to 14.5 percent. After Phase III construction, the proposed future expansion of the warehouse and the Personnel Processing Area, the PIC value increases to 18.9 percent, which is a Situation 2.

Table 4-6
Predicted Land Cover for RDF Drainage Area

Construction Phase	Grass/Trees	Gravel	Impervious	Percent Impervious Cover (PIC)
Pre-development	38.31	0.6	1.26	3.14
Phase I	35.12	0.46	4.6	11.43
Phase II	33.9	0.46	5.82	14.5
Phase III	32.13	0.46	7.58	18.87

After construction of the RDF, drainage runoff from the site would increase by 8.4 cubic feet per second (0.24 cubic meter per second) with approximately 70 percent storm water flow draining south into North Creek (Figure 3-1) and the remaining 30 percent draining to the north side of the proposed development. Runoff from the proposed paved surfaces and buildings would be collected within drainage swales along the roads and parking areas and within existing wetland drainage courses. These would be adequate to take the increase flow and direct it to existing streams. The drainage swales would carry the flows to the existing nearby creek located east of the project via drainage box culverts under the perimeter road. The new swales will be adequate to take the flow and velocity of the runoff from the RDF site. Once the runoff enters the existing creek, the existing channel is adequate to take the small increase in runoff from the tributary.

4.7.3.2 No Action Alternative

Under the No Action Alternative, there would be no short or long-term adverse impact on the installation's storm water drainage system.

4.7.4 Natural Gas

4.7.4.1 Proposed Action Alternative

The Proposed Action Alternative would have negligible impact on the installation's natural gas distribution system.

4.7.4.2 No Action Alternative

Under the No Action Alternative, there would be no short or long-term adverse impact on the installation's natural gas distribution system.

4.7.5 Electricity

4.7.5.1 Proposed Action Alternative

An estimated electrical demand for the facility would be 6,000 kVA, 7,000Amp/480-277V Service. The facility would have a diesel-powered 100 kilowatts (kW) back-up generator and an uninterruptible power source (UPS) of 700 kW. The existing electrical lines have the capacity to handle the additional demand of the RDF facility. The Proposed Action Alternative would have negligible impact on the installation's electrical distribution system.

4.7.5.2 No Action Alternative

Under the No Action Alternative, there would be no short or long-term adverse impact on the installation's electrical distribution system.

4.7.6 Heating / Cooling

4.7.6.1 Proposed Action Alternative

A 90 AC ton cooler would be located on top of the Delivery Screening Area building. The Proposed Action Alternative would have negligible impact on DCEETA's heating/cooling system.

4.7.6.2 No Action Alternative

Under the No Action Alternative, there would be no short or long-term adverse impact on DCEETA's heating/cooling system.

4.7.7 Communications

4.7.7.1 Proposed Action Alternative

The Proposed Action Alternative would have negligible impact on DCEETA's communication system.

4.7.7.2 No Action Alternative

Under the No Action Alternative, there would be no short or long-term adverse impact on DCEETA's communication system.

4.7.8 Solid Waste

4.7.8.1 Proposed Action Alternative

The Proposed Action Alternative would create the requirement to remove and contractually dispose of two existing mounds of buried construction debris (Subchapter 3.7.8) at a state-approved landfill. Clearing of the proposed site would not require demolition of any buildings or structures, except for the existing modular mail delivery facility. Therefore, timber removal would be required (Subchapter 3.2.4). RDF operations would have negligible impact on DCEETA's solid waste collection system. Fort Belvoir is within an air quality non-attainment area (Subchapter 3.5.4), therefore cleared trees would be considered as spoil and would require contractual disposal as solid waste.

4.7.8.2 No Action Alternative

Under the No Action Alternative, there would be no short or long-term adverse impact on DCEETA's solid waste collection system.

4.8 Socioeconomic Impacts

4.8.1 Proposed Action Alternative

Implementation of the Proposed Action Alternative would have no effect on normal staffing levels or the installation's workforce or resident populations. The Proposed Action would have little or no effect on regional demographics, long-term employment levels, or average incomes for Fort Belvoir and the surrounding area. The proposed development and widening of the perimeter fence would generate construction jobs over the 12 to 15-month construction period, but would have little or no effect on regional demographics, long-term employment levels, or average incomes for Fort Belvoir and the surrounding area.

The Proposed Action Alternative would generate about 150 – 200 construction jobs over the life of the construction period, with an estimated maximum of 70 workers onsite during the most

intensive construction activity. Workers would likely be recruited from the local workforce, so no short-term increase in the Fairfax County population or income is anticipated. Because of the relative size and costs associated with this action, the impact of the Proposed Action on overall income and local employment levels for Fairfax County would be insignificant.

Environmental Justice

Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires that federal agencies must, to the greatest extent practicable, identify and address whether their activities would have a disproportionately high or adverse human health or environmental impact on minority or low income populations. The community of Accotink Village is both a minority and a low-income population as compared to the state of Virginia and Fairfax County. It is the closest Environmental Justice community to the project site, but is located over 1.5 miles (2.4 km) away. Residents would not likely be disturbed by noise or other construction-related effects, nor would there be long-term effects on these residents.

Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, directs each federal agency to identify and assess disproportionate environmental health and safety risks on children. “Environmental health and safety risks” are defined as “risks to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest.” The proposed action has no potential to disproportionately affect populations of children.

4.8.2 No Action Alternative

Implementation of the No Action Alternative would similarly result in no change of personnel and, therefore, no change in the installation’s workforce or resident populations. It would have no impact on regional demographics, employment levels, or average incomes for Fort Belvoir and the surrounding area. It would have a negative impact, in it would fail to provide the workforce with adequate AT / PF.

4.9 Impacts on Community Facilities and Services

4.9.1 Proposed Action Alternative

Because there would be no increase in personnel, the Proposed Action Alternative would cause no long-term increase in demand for or use of public community facilities and services. Neither construction nor operation of the RDF would directly impact operations at the Fairfax County Kingstowne fire station, located 1,000 feet west of the William Woods Road Gate intersection. Vehicles entering and exiting the RDF would only be allowed to turn right into or out of the gate, thereby minimizing any interference with emergency vehicle response times to locations northeast or southwest on Telegraph Road.

4.9.2 No Action Alternative

Implementation of the No Action Alternative would result in no change of long-term impacts on community facilities and services.

4.10 Impacts on Transportation and Traffic

4.10.1 Proposed Action Alternative

The construction activity would generate short-term increase in am and pm peak traffic, through the temporary addition of construction worker commutes. Fort Belvoir would provide signage along Telegraph Road to warn drivers of the presence of the construction vehicles entering and exiting the site.

The Proposed Action Alternative involves no long-term increase in personnel or an increase in the number of deliveries and non-employee visitors. The anticipated traffic volume for incoming delivery and visitor traffic entering DCEETA would not change from the existing volume, which is about 136 to 156 vehicles per day. This incoming and exiting traffic, which represents a minor percentage of overall volume of traffic along Telegraph Road, would simply be diverted from the Main Gate at Road B to the William Woods Road Gate, which would be dedicated to visitors and delivery traffic.

The Proposed Action Alternative would, however, cause a long-term beneficial impact on traffic patterns along Telegraph Road. Non-DCEETA employee visitors and delivery vehicles being checked in and processed at the Main Gate at Road B delay the entrance of DCEETA employee vehicles, and cause queuing that often extends beyond the Beulah Street/Telegraph Road intersection (Bizzoco, 2005). The new entry point has been designed to prevent any back-up queuing of vehicles on Telegraph Road – all queuing would occur on-post. Eastbound traffic entering the RDF facility at the William Woods Road Gate would enter via a 300-foot (91.5 m) dedicated right-turn queuing lane. In addition, about 62 DCEETA employees who presently turn right at the Main Gate at Road B and travel northeast on Telegraph Road on their way home during the afternoon peak traffic period, would leave instead via the William Woods Road Gate, relieving some of the congestion at the Main Gate at Road B. As a part of VDOT's approval for the road connection with Telegraph Road (State Route 611) to help mitigate concerns, hours of operation would be limited to 9:30 am to 3:00pm Monday through Friday.

4.10.2 No Action Alternative

Implementation of the No Action Alternative would maintain current traffic patterns and the same number of vehicle trips on this part of Fort Belvoir. It would not alleviate queuing problems on Telegraph Road at the existing Main Gate at Road B (Figure 3-1). No construction would be necessary, and construction-related impacts would not occur.

4.11 Antiterrorism / Force Protection Program Requirements

4.11.1 Proposed Action Alternative

Implementation of the Proposed Action Alternative would result in compliance with DoD minimum AT/FP requirements, particularly the minimum standoff distance of 1312 feet (400 m) between occupied buildings and 150 feet (45.8 m) between buildings and perimeter fences.

Chapter 2 outlines the proposed measures that would isolate the elements of the proposed project from the existing constructed fuel oil storage tank area, the power plant, and the main DCEETA complex. The new secondary security fence with PIDS and CCTV extending from the existing east perimeter fence near North Creek (Figure 3-1) through the RDF area to the north perimeter fence located west of William Woods Road Gate would provide an additional separation of the main DCEETA complex from non-employee traffic. Fuel trucks are considered a possible hazard (threat) when close to mission critical facilities, such as DCEETA. Constructing the fuel receiving station near the William Woods Road Gate would keep the fuel trucks a safe distance from the main DCEETA complex and reduce danger to DCEETA personnel and facilities. The safety factor would be further increased by keeping fuel vehicles within DCEETA's Non-secure area.

4.11.2 No Action Alternative

Implementation of the No Action Alternative would have a negative impact, in it would fail to provide adequate AT / PF.

4.12 Cumulative Impacts

Cumulative impacts have been defined by the CEQ as:

Impacts on the environment, which result from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.

The CEQ regulations require NEPA environmental analyses to address connected, cumulative, and similar actions in the same document. This requirement prohibits segmentation of a project into smaller components to avoid required environmental analysis. Expansions and development may occur in the future as mission changes are defined and the need for additional facilities arises, but the Proposed Action analyzed herein is not dependent on such future actions, and is not a "segment" of a larger project.

Upcoming DCEETA Projects include an additional parking garage and improvements to existing facilities but no major new facility construction. The following Fort Belvoir proposed projects individually may not introduce severe adverse impacts, but taken together, these projects may have the potential to do so, particularly if mitigation measures do not consider all the proposals

together. Thus, project development may have a cumulative impact on the environment if mitigation measures are not implemented. To consider all cumulative impacts, Fort Belvoir plans to assess the following North Post projects:

- Woodlawn Road Corridor Reforestation
- RTI – Telegraph Road Connector
- Soldier Support Center
- Navy Seabee Complex
- Upgrade of Physical Fitness Center
- Religious Education Center adjacent to North Post Chapel
- US Army Intelligence & Security Command (INSCOM) east of DLA
- Residential Communities Initiative (RCI)
- Army Museum
- DeWitt Army Hospital Replacement (proposed relocation depending on BRAC decision (Subchapter 3.9.1))

The analysis of the Proposed Action Alternative has incorporated these planned projects. The project site, which is in the extreme northeast corner of Fort Belvoir, is a considerable distance from these projects. No adverse cumulative impacts are anticipated to occur from the implementation of this project. In addition, the transportation, noise, and air quality evaluations included the consideration of anticipated general population growth within the project study area, as well as the increase in personnel, commuter vehicle trips, and changes in traffic patterns to which the above-listed projects may contribute.

Fort Belvoir is reviewing proposed plans for two highway projects (Figure 1-3) that are less than 2,800 feet (854 m) from the proposed RDF project area (Subchapter 3.1.2): (1) relocation of Beulah Street, and (2) excavation of the abandoned Woodlawn Road. The cumulative impacts of these projects and the proposed projects would be negligible.

4.13 Unavoidable Adverse Impacts

Implementation of the Proposed Action would generate temporary, minor disturbances and permanent loss of forest and wildlife habitats due to construction of the proposed buildings, associated parking areas, the new security fence, and the road improvements. Short-term unavoidable adverse impacts that would occur during construction include:

- Soil loss due to erosion.
- Short-term degradation of surface water from increased erosion and organic/inorganic pollutants from construction equipment and vehicles.
- Increase in noise due to construction equipment operation.
- Decrease in air quality from fugitive dust.

Encroachments on the RPA and wetlands resulting from the construction of the PPA / CC and widening the roadway would be unavoidable. However, these encroachments are small, and

represent the minimum needed to accomplish the crossing or provide a buildable area. Compliance with wetland permit conditions and use of best management practices will ensure impacts are not significant (Subchapter 4.14).

Long-term adverse impacts would include the loss of second growth hardwood forest and wildlife habitat due to clearing and grading. These long-term impacts would be minimal because best management practices would reduce the overall impervious surfaces area in this part of the post, as well as restore a considerable amount of wildlife habitat.

4.14 Mitigation Measures

US Army Garrison Fort Belvoir would implement measures to mitigate unavoidable adverse impacts of this action. The Environmental and Natural Resource Division (ENRD) would consult with DCEETA to ensure that mitigation measures are incorporated into contract documentation and construction plans. Mitigation measures would be incorporated into the proposed action and would be required by contract documents.

Resource Protection Areas, Stream Restoration and Wetlands - For the crossing of RPA and streambeds, the Army would ensure the following measures were taken by the contractor, as appropriate (US Army Garrison Fort Belvoir, 2001b):

- Stabilize affected slopes.
- Minimize vegetation removal.
- Minimize the trench width for buried utility banks.
- Locate buried utility banks within the shoulders of existing roads.
- Expedite construction within the RPA with stream crossings being no more than 21 days.
- Enhance the riparian buffer through replanting.
- Build new or repair of existing storm water control structures, e.g. energy dissipation and flow moderation devices.
- Avoid unnecessary disturbances to vegetation and soils outside of the proposed grading limits.
- Use super silt fences and other erosion control measures to delineate the RPA buffer prior to site work to prevent accidental intrusion of the buffer.
- Apply BMPs to minimize impact on the RPA and associated wetlands.
- Use directional boring for stream crossings to minimize short and long-term stream impacts.

All stream crossings would be permitted through the US Army Corps of Engineers (USACE) and Virginia Department of Environmental Quality (VDEQ), and be compliant with the special and general conditions of those permits.

Soil Erosion/Storm Water Controls – In addition to the measures for protection of the RPA, streams, and wetlands, DCEETA would ensure that the contractor implement and maintain strict erosion and sediment (E&S) controls for the overall site development, consistent with the

Virginia Department of Conservation and Recreation (DCR), Division of Soil and Water Conservation (DSWC) 1992 Virginia Erosion and Sediment Control Manual (VDCR, 1992) and the Public Facilities Manual of the County of Fairfax (Fairfax County, 2001). These measures would be summarized in an E&S Control Plan that is approved by the Fort Belvoir ENRD and included in the VPDES General VSMP Permit for Discharges of Storm Water from Construction Activities application.

Construction activities will be monitored to ensure that erosion and storm water management practices are adequate in preventing sediment and pollution migration into nearby surface waters. DCEETA will be responsible for oversight of on-site contractors, regular field inspections, prompt action against non-compliant sites, and/or other mechanisms, consistent with agency policy. Fort Belvoir will inspect field sites regularly and may take appropriate action in the event of noncompliance with contractual requirements.

To reduce the amount of storm water generated by the proposed action, DCEETA has adopted a design that minimizes natural area loss and reduces impervious surfaces. They are considering ways to incorporate low impact development techniques and storm water BMPs, using the Conservation Landscaping and Bay Scapes Guide for Federal Land Managers (USFWS, 2001). Low impact development and sustainable landscape practices to maximize infiltration and pollutant removal. Such practices would intercept, detain, absorb, and filter precipitation to reduce volume of runoff and remove suspended sediment.

Cultural Resources – Based on a Cultural Resources Assessment of the area, a potentially eligible archeological site as identified in the vicinity of the proposed site. Archaeological site 44FX459 (known as Potter's Hill and the Potter-Milan Family Cemetery) located between the proposed RDF project area and Telegraph Road, may be eligible for the National Register for Historic Places (NRHP). An evaluation of the impact of the proposed action on these sites is ongoing. Once completed, a 'Determination of Effect' letter will be prepared prior to project finalization and submitted to Department of Historic Resources (DHR) for concurrence in accordance with Section 106 of NHPA requirements. This submission would initiate the consultation process as set forth under NHPA. No historic structures will be impacted by the proposed project.

Air Quality – Fugitive particle emissions would be minimized during construction through use of standard control measures outlined in Virginia Standards for Fugitive Dust Emissions (9 VAC 5-50-90) and Fort Belvoir's Title V operating permit (NVRO70550). The contractor will:

- Where possible, spray water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads, or the clearing of land;
- Apply water, or suitable chemicals on dirt roads, materials stockpiles, and other surfaces which may create airborne dust;
- Use adequate containment methods during sandblasting or other similar operations;

- Cover open equipment for conveying or transporting material likely to create objectionable air pollution when in motion; and
- Remove promptly spilled or tracked dirt or other materials from paved streets and dried sediments resulting from soil erosion.

Bulk Fuel Receiving Station – Tank installation and site design would comply with state regulations (e.g., backfill materials, piping, leak detection systems, inspection and monitoring). With the inclusion of these features, no adverse environmental impacts are anticipated. The existing Master Spill Plan would be updated within six months after startup of operation to incorporate the fuel-related elements of the Proposed Action. Thus, appropriate monitoring, response, and notification procedures would be implemented. Placement of temporary UST's for construction purposes; compliance with UST permit requirements in accordance with the existing Master Spill Plan; and filing appropriate VPDES permit application for Industrial Activity (Subchapter 4.7.3.1).

4.15 Relationship between Local Short-term Use of the Environment and the Enhancement of Long-term Productivity

Implementation of the Proposed Action Alternative would result in long-term benefits for the security and protection of the mission-critical facilities and personnel at DCEETA with minor long-term impacts on the environment.

4.16 Irreversible and Irretrievable Commitments of Resources

The construction of the RDF and widening of the east perimeter road would expend modest amounts of man-hours, fuel, and materials associated with design and construction. The project would consume non-renewable resources (oil, gasoline) and modest amounts of money and man-hours to design, build and operate the inspection station and the RDF.

4.17 Conclusion

The anticipated consequences of the Proposed Action Alternative and No Action Alternative are summarized in Table 4-7. These impacts represent a subjective rating that is representative of:

- Quality/uniqueness of the resources affected.
- Intensity and duration of the impact, such as short and long-term.
- Potential to minimize the impact through mitigation.

In summary, this EA described and identified the potential impacts of the Proposed Action Alternative and the No Action Alternative. The Proposed Action would not have a significant impact on the quality of the human environment and an environmental impact statement (EIS) is not needed.

Table 4-7

Summary of Impacts of Proposed Action Alternative and the No Action Alternative.

Resources	Alternative	No Action
Land Use	-	-
<i>Land Use</i>	O	O
<i>Plans</i>	O	O
<i>Aesthetics</i>	O	O
Natural Resources	-	-
<i>Physiography</i>	-	-
Geology	O	O
Geomorphology	O	O
Topography	O	O
Soils	M-	O
<i>Water Resources</i>	-	-
Groundwater	O	O
Surface Water	L-	O
<i>Environmentally Sensitive Areas</i>	-	-
Forest & Wildlife Corridor	O	O
Floodplains	L-	O
Wetlands	L-	O
Chesapeake Bay RPAs	L-	O
<i>Vegetation & Wildlife Habitats</i>	L-	O
<i>Threatened & Endangered Species</i>	O	O
Cultural Resources	M-	O
Air Quality	O	O
Noise	O	O
Hazardous Substances	L-	O
Infrastructure & Utilities	O	O
Socioeconomics	O	O
Community Facilities & Services	O	O
Transportation & Traffic	O	O

O = No Impact H = High Impact M = Moderate impact L = Low impact
 - = Adverse Impact + = Positive Impact

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6 APPENDIX

Appendix A Determination of Consistency with Virginia's Coastal Resources Management Program

Pursuant to Section 307 of the Coastal Zone Management Act of 1972, as amended, this is a Federal Consistency Determination for Defense Communications-Electronics Evaluation and Test Activity (DCEETA) Remote Delivery Facility (RDF) and Perimeter Road widening at Fort Belvoir. The Army is required to determine the consistency of its activities affecting Virginia's coastal resources or coastal uses with the Virginia Coastal Resources Management Program (CRMP).

This document represents an analysis of project activities in light of established Virginia CRMP Enforceable Programs. Furthermore, submission of this consistency determination reflects the commitment of the Army to comply with those Enforceable Programs. The proposed project would be constructed and operated in a manner that is consistent with the Virginia CRMP. Fort Belvoir has determined that the RDF and east perimeter road widening project would not affect the land and water uses or natural resources of the Commonwealth of Virginia's coastal zone.

1. Description of Proposed Action

Under the Proposed Action, the RDF will be constructed on an estimated 15.6-acre parcel of land 400 feet southeast of Telegraph Road in the northeast quadrant of the DCEETA complex. In addition, the existing William Woods Road entry would be widened, and a 1.6-mile section of the east perimeter road would be widened to two lanes. All three project elements to include site preparation and utility relocation would be conducted inside the DCEETA perimeter fence.

In addition to the Proposed Action Alternative, a No Action Alternative was evaluated in this EA. The Proposed Action Alternative described in this document would provide a safe distance between the delivery vehicle/non-employee visitor screening area and the main DCEETA complex in accordance with Department of Defense Antiterrorism/Force Protection requirements. Secondly, widening the east segment of the Perimeter Road would provide added perimeter patrolling flexibility for the unmanned portion of the perimeter road.

2. Assessment of Probable Effects

The planning and design phase of the proposed action would have no coastal zone effects to relevant Virginia CRMP elements. All applicable permits required for the proposed action will be obtained and complied with throughout project duration. A review of the permits and/or approvals required under the enforceable Regulatory Program has been conducted. Fort Belvoir evaluated the construction and operation of the RDF facility based on their foreseeable effect on the following enforceable policies:

Fisheries - The project has no foreseeable impacts on finfish or shellfish resources and would not affect the promotion of commercial or recreational fisheries at the project site. The project site is approximately 2.7 miles from the Potomac River. The project implements best management practices (BMPs) recommended by the Virginia Departments of Conservation and Recreation (DCR) and Forestry (DOF). The project will not use tributyltin (TBT) in any form.

Subaqueous Lands Management – The project has no foreseeable impact on subaqueous resources. The project site is approximately 2.7 miles northwest of the Potomac River. The project implements BMPs recommended by the Virginia Departments of Conservation and Recreation and Forestry. The Virginia Marine Resources Commission (VMRC), pursuant to Virginia Administrative Code (VAC) Section 28.2-1204, has jurisdiction over encroachments in, on or over any State-owned rivers, streams and creeks. A permit will be obtained, if any of the proposed actions encroach channelward of the ordinary high water mark of rivers and streams.

Tidal and Non-tidal Wetlands Management – With proposed mitigation measures, the impacts from construction and operation of the RDF on wetlands would be minimal. Fort Belvoir has confined the proposed construction to no closer than 100 feet of delineated wetlands, allowing for an additional protective buffer to avoid impacting existing wetlands.

Dunes Management – Construction and operation of the RDF has no foreseeable impact on coastal primary sand dunes. The project would not destroy or alter coastal primary sand dunes.

Non-Point Source Water Pollution Control – Land disturbing activities within project area, such as timber harvesting, clearing and grading, installation of staging areas, soil/dredge spoil areas, and construction of buildings, roadways, parking areas, and utility easements would disturb 10,000 square feet or greater [2,500 square feet or greater of Chesapeake Bay Resource Preservation Areas (RPAs), as defined by the Chesapeake Bay Preservation Act (Bay Act), Virginia Code 10.1-2100 *et seq.* and its implementing Chesapeake Bay Preservation Area Designation and Management Regulations, 9 VAC 10-20-10 *et seq.*]. Erosion and sediment controls will be implemented in accordance with Virginia Erosion and Sediment Control Law and Regulations (VESCL&R) and Virginia Storm Water Management Law and Regulations; the Forestry BMPs for Water Quality; the Chesapeake Bay Preservation Area Designation and Management (VSWML&R) guidelines; and the Virginia Pollutant Discharge Elimination System (VPDES) general permit for storm water discharges. Construction activities will be monitored to ensure that erosion and storm water management practices are adequate in preventing sediment and pollution migration into nearby surface waters.

Because the proposed action is greater than one acre, a Storm Water Pollution Prevention Plan will be required. Fort Belvoir personnel will incorporate design criteria that: a) minimize natural area loss; b) adopt low impact development and best management technologies for storm water, sediment and erosion control, and reduce impervious surfaces; and c) consider guidance from the Conservation Landscaping and Bay Scapes Guide for Federal Land Managers (USFWS, 2001). Based on the Executive Council of the Chesapeake Bay Program Directive 01-1, Managing Storm Water on State, Federal and District-owned Lands and Facilities, Fort Belvoir personnel

will lead by example in controlling nutrient, sediment and chemical contaminant runoff during project construction and operation of the RDF.

Fort Belvoir would prepare and implement erosion and sediment control (ESC) and is ultimately responsible for achieving project compliance through oversight on on-site contractors, regular field inspection, prompt action against non-compliant sites, and/or other mechanisms, consistent with agency policy. Accordingly, Fort Belvoir will prepare and implement erosion and sediment control and storm water management plans to ensure compliance with state law. Fort Belvoir is ultimately responsible for achieving project compliance through oversight on on-site contractors, regular field inspection, prompt action against non-compliant sites, and/or other mechanisms, consistent with agency policy.

Fort Belvoir natural resource professionals will implement the Forestry BMPs described in the Installation Integrated Natural Resources Management Plan (INRMP) for land and water quality monitoring, impact mitigation and land rehabilitation programs specific to this project. These programs will continue into the operational phase of the project, to prevent migration of pollutants into nearby surface waters and associated wetlands. Thus, the construction and operation of the RDF facility and the east perimeter road widening would not cause non-point source pollution.

Point Source Water Pollution Control – Construction and operation of the RDF facility would be served by sanitary sewer system with no planned septic system and drainfield. The proposed project would not generate any new discharge and will comply with the VPDES Storm Water General Permit for associated construction activities. The project would not cause a point source pollution.

Shoreline Sanitation – Construction and operation of the RDF facility and the east perimeter road widening would not have negligible impact on shoreline sanitation impact. The project would not involve installation of individual wastewater treatment systems.

Point Source Air Pollution Control – The project site is located within an ozone non-attainment area. Fort Belvoir will employ precautionary measures to reduce ground-level ozone concentrations by minimizing the generation of ozone precursors such as volatile organic compounds (VOCs) and nitrogen oxides (NO_x) principally by controlling or limiting of fossil fuels during operation of construction equipment and vehicles. All access roads, parking areas and ingress/egress will be designed and constructed so as to avoid or minimize traffic congestion and/or unnecessary localized vehicular idling. Because the project site is located within an ozone non-attainment area, open burning of construction material, to include cleared vegetation, would not occur.

Construction and operation of the RDF facility and the east perimeter road widening would have negligible impact on air quality. Construction activity related to the proposed action is likely to give rise to fugitive dust emissions which will be kept to a minimum by implementing the following measures:

- Use of water or chemicals for dust control, where possible.

- Use of hoods, fans, and fabric filters to enclose and vent the handling of dusty materials.
- Covering of open equipment conveying or transporting of materials.
- Prompt removal of spilled or tracked dirt or other materials from paved streets and removal of dried resulting from soil erosion.
- Provide stabilized construction entrances.
- Apply water to suppress dust, such as washing down construction vehicles or paved roadways immediately adjacent to the construction site.
- Emission controls and mufflers will be used whenever feasible. Regular maintenance will be performed on all construction equipment."

Construction and operation of the proposed project will be subject to Department of Environmental Quality (DEQ) Regulations 9 VAC 5-50-60, Control and Abatement Air Pollution, such as:

9 VAC 5-50-80/90	Visible and fugitive dust emissions
9 VAC 5-40-55120	Restricting the usage and application of cut-back asphalt (liquefied asphalt cement, blended with petroleum solvents) for paving during the months of April through October.

Coastal Lands Management – Construction and operation of the RDF facility and the east perimeter road widening would have negligible impact on any coastal lands.

Chesapeake Bay Preservation Areas – As indicated in the EA, the proposed activity has been modified to avoid impact to the 100-foot buffer to the RPAs that border the perennial streams that occur within the project development area. Although Chesapeake Bay Preservation Areas (CBPAs) are not locally designated on federal lands, Fort Belvoir are not relieved of their responsibilities to be consistent with performance criteria of the Chesapeake Bay Preservation Area Designation and Management Regulations (Regulations), as one of the enforceable policies of VCP. Fort Belvoir in an effort to be consistent with all requirements of applicable permits.

Natural Heritage Resources – These resources are defined as the habitat of rare, threatened and endangered plant and animal species, state unique or exemplary natural communities, significant geologic formations and similar features of scientific interest. If any rare, threatened and endangered species or their critical habitats are observed or will be adversely impacted during construction of the RDF facility and the east perimeter road widening, immediate suspension of activities will occur and the DNH, the VDGIF, the USFWS, as well as the Virginia Department of Agricultural and Consumer Services (VDACS) will be notified.

Cultural Resources - Based on a Cultural Resources Assessment of the area, a potentially eligible archaeological site was identified in the vicinity of the proposed site. Archaeological site 44FX459 (known as Potter's Hill and the Potter-Milan Family Cemetery) located between the proposed RDF project area and Telegraph Road, may be eligible for the National Register for Historic Places (NRHP). An evaluation of the impact of the proposed action on these sites is ongoing. Once completed, a 'Determination of Effect' letter will be prepared prior to project finalization and submitted to Department of Historic Resources (DHR) for concurrence in

accordance with Section 106 of NHPA requirements. This submission would initiate the consultation process as set forth under NHPA. No historic structures will be impacted by the proposed project.

Solid & Hazardous Waste - In the site vicinity, a short-term increase in hazardous substances may be introduced to the ground surface from construction equipment operation. In the event of a spill, the Army would excavate and dispose of contaminated soil in accordance with state and federal regulations. In addition, a search of waste-related databases was preformed. Some of the applicable state laws and regulations are: Virginia Waste Management Act, Code of Virginia Section 10.1-1400 *et seq.*; Virginia Hazardous Waste Management Regulations (VHWMR) (9VAC 20-60); Virginia Solid Waste Management Regulations (VSWMR) (9VAC 20-80); Virginia Regulations for the Transportation of Hazardous Materials (9VAC 20-110). Some of the applicable Federal laws and regulations are: the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. Section 6901 *et seq.*, and the applicable regulations contained in Title 40 of the Code of Federal Regulations; and the U.S. Department of Transportation Rules for Transportation of Hazardous Materials, 49 CFR Part 107.

The use of herbicides or pesticides for landscape maintenance would be in accordance with the principles of integrated pest management. The least toxic pesticides that are effective in controlling the target species should be used. Fort Belvoir would avoid using pesticides or herbicides containing volatile organic compounds (VOCs) as their active ingredient to the maximum extent practicable in order to protect air quality.

Effective siting, planning and on-site Best Management Practices (BMPs) will help to ensure that environmental impacts are minimized. However, pollution prevention techniques also include decisions related to construction materials, design, and operational procedures that will facilitate the reduction of wastes at the source. We have several pollution prevention recommendations that may be helpful in constructing or operating this project:

- Consider environmental attributes when purchasing materials. For example, the extent of recycled material content, toxicity level, and amount of packaging should be considered and can be specified in purchasing contracts.
- Consider contractors' commitment to the environment when choosing contractors. Specifications regarding raw materials and construction practices can be included in contract documents and requests for proposals.
- Choose sustainable materials and practices for infrastructure and building construction and design. These could include asphalt and concrete containing recycled materials, and integrated pest management in landscaping, among other things.

3. Summary of Findings

Based on the above analysis, which is elaborated in the EA, Fort personnel will consistently utilize established BMP's; obtain requisite permits and approvals; and implement measures that will mitigate potential environmental impacts. With the proposed mitigation measures, Fort Belvoir finds the proposed construction of the RDF facility and the east perimeter road widening would be consistent to the maximum extent practicable, with the federally approved enforceable

provisions of VCRMP, pursuant to the Coastal Zone Management Act of 1972, as amended and in accordance with 15 CFR 930.30.

By certification that the proposed action is consistent with VCRMP Enforceable Programs, the Commonwealth of Virginia will be notified that it has six months from receipt of this letter, in which to concur with or object to this Consistency Determination. However, pursuant to 15 CFR 903.62(b), if the Commonwealth of Virginia has not issued a decision within three months from receipt of this determination, it shall notify Fort Belvoir the status of the matter and the basis for further delay. The State's concurrence, objection, or notification of review status shall be sent to:

**Commander
U.S. Army Garrison Fort Belvoir
9430 Jackson Loop Suite 100
ATTN: IMNE-BEL-ELE
Fort Belvoir, VA 22060-5116**

Appendix B

Conformity Analysis and Emission Calculations

Clean Air Conformity and Applicability

The Clean Air Act (CAA) contains the legislation that mandates the general conformity rule to ensure that federal actions in nonattainment and maintenance areas do not interfere with a state's timely attainment of the NAAQS. The general conformity rule divides the air conformity process into two distinct areas: applicability analysis and conformity determination. The applicability analysis process requires federal agencies to determine if their proposed action(s) would increase emissions of criteria pollutants above preset threshold levels (40 CFR §93.153). These threshold rates vary depending on severity of the nonattainment and geographic location.

De Minimis Emissions

De minimis emissions are total direct and indirect emissions of a criteria pollutant caused by a federal action in a nonattainment or maintenance area at rates less than specified applicability thresholds.

Table 6-1
Applicability Thresholds for Nonattainment Areas

Criteria Pollutants/NAA Status	TPY
O₃ (VOCs or NO_x)	
Serious NAAs	50
Severe NAAs	25
Extreme NAAs	10
Other O ₃ NAAs outside an O ₃ transport region	100
Marginal and moderate NAAs inside an O ₃ transport region	
NO _x	100
VOC	50
CO	
All NAAs	100
SO₂ or NO_x	
All NAAs	100
PM₁₀	
Moderate NAAs	100
Serious NAAs	70
Pb	
All NAAs	25

TPY = tons per year

VOC = volatile organic compounds

Source: 40 CFR §93.153

Table 6-2
Applicability Thresholds for Maintenance Areas

Criteria Pollutants	TPY
O₃ (NO_x, SO₂ or NO₂)	
All maintenance areas	100
O₃ (VOCs)	
Maintenance areas inside an O ₃ transport region	50
Maintenance areas outside an O ₃ transport region	100
CO	
All maintenance areas	100
PM₁₀	
All maintenance areas	100
Pb	
All maintenance areas	25

TPY = tons per year

VOC = volatile organic compounds

Source: 40 CFR §93.153

Regionally Significant

“Regionally significant” emissions are defined as the total direct and indirect emissions of a federal action for any criteria pollutant that represents 10 percent or more of a nonattainment or maintenance area's total emission for that pollutant. An action is also subject to the general conformity rule if the emissions are deemed regionally significant, even if the emissions are *de minimis*.

Construction Emissions Calculations

Fugitive dust (PM₁₀) emissions were estimated using procedures outlined in AP-42 Section 13.2.3 Heavy Construction Emissions and Section 11.9 Western Surface Coal Mining. An emission factor of 1.2 tons/acre/month (80 lbs/acre/day) and a ratio of PM₁₀ to TSP of 0.45 were used to estimate fugitive particulate emissions at the proposed locations (Table A-3). Watering the disturbed area twice per day with approximately 3,500 gallons per acre would reduce particulate emissions by as much as 50 percent (USEPA 1995). Fugitive particulate emissions due to the heavy construction activities are the only anticipated stationary sources of emissions during the construction phase of the proposed action.

Increased VOC and NO_x emissions from proposed construction activities would result from the following potential activities:

- Use of construction equipment.
- Movement of trucks carrying construction materials.
- Construction worker's commutes.

Construction equipment emissions were based on the estimated hours of use and emission factors for each motorized source. Emission factors for NO_x and VOCs related to heavy-duty diesel equipment were obtained from Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling—Compression-Ignition (USEPA, 2004). Emission factors for NO_x and VOCs related to delivery trucks and the vehicles of construction workers were obtained from AP-42 Highway Mobile Source Emission Factors. The equipment and vehicle operation hours are estimated based on Means (Waier, 2001) and field experience from similar projects (Tables A-4 and A-5).

Vehicle Microscale CO Concentration Modeling

The CO microscale air-quality analysis is based on procedures outlined in the following documents:

- A Modeling Methodology for Predicting Pollutant Concentrations Near Roadway Intersections (USEPA, 1995).
- Mobile 6.2 User's Guide (USEPA, 2004).

CO traffic impacts are determined in two steps: 1) vehicle exhaust emission factors are calculated using the USEPA Mobile 6.2 computer model; and 2) these emission factors are subsequently used as input for the USEPA CAL3QHC dispersion model to calculate CO concentrations. The models used are described as follows:

- Mobile 6.2 generates vehicular emission factors based on locality-specific vehicle fleet characteristics including vehicle age, operating mode of vehicles (hot/cold starts), and percentage of oxygenated fuel used. Additionally, Mobile 6.2 can incorporate adopted emission control strategies such as anti-tampering programs and inspection and maintenance (I/M) programs.

CAL3QHC (Version 2) predicts the level of CO or other pollutant concentrations from motor vehicles traveling near roadway intersections. The model incorporates inputs such as roadway geometry, traffic volumes, vehicular emission rates, and meteorological conditions.

The intersection location determinations and CO estimations were made through the following process:

1. Traffic, operating conditions, roadway configurations and geometry information was gathered for roadways and intersections of interest.
2. Potential worst-case roadways were identified based on the level of service and traffic flow.
3. Worst-case receptor locations were identified as the location of maximum CO concentration.
4. Mobile 6.2 and CAL3QHC were used to calculate CO concentrations due to vehicle traffic at identified "worst-case" roadway and receptor locations. Assumptions outlined in the 1985 Caltrans Report, Development of Worst Case Meteorology Criteria were used for the analysis.

5. Persistence factor of 0.7 was used to estimate the 8-Hour concentration from the 1-Hour concentration.
6. Background concentrations due to the intersection were determined using local monitoring data obtained from the VDEQ and added to modeled concentrations.

Applicability Determination

Since the annual emission values for the proposed alternative are not anticipated to exceed the *de minimis* criteria of 50(100) tpy and would not make up ten percent or more of the available regional emission inventory for VOCs or NO_x, a formal conformity determination is not required and potential air-quality impacts would not be significant.

Table 6-3
Estimated Fugitive Particulate Emissions (PM₁₀) from Construction Activities

	Roadway Construction	Building Fabrication	Parking Lots	Walking Trails	Total
Duration [days]	50	155	30	30	165
Exposed Area [acres]	3.75	1.62	0.55	0.41	N/A
Emission Factor [pounds/acre/day] ¹	80	80	80	80	N/A
Watering	0.5	0.5	0.5	0.5	N/A
%PM ₁₀ ²	0.45	0.45	0.45	0.45	N/A
PM ₁₀ Emissions [Tons]	1.7	2.3	0.15	0.11	4.2

1 AP42 Section 13.2

2 AP42 Section 11.9

Table 6-4
Estimated Emissions from Proposed Emergency Generator and Heating Units

Generator Rating [kW]	Estimated Runtime [hrs]	Annual Power Output [kWh/yr]	VOC [g/10 ⁶ ft ³]	NOx [g/10 ⁶ ft ³]	VOC [g]	NOx [g]
100	100	10000	1.53	18.848	15300	188480
Maximum Heat Input [BTU/hr]	Estimated Annual Usage [BTU/yr]	Fuel Usage [10 ⁶ ft ³]	VOC [g/10 ⁶ ft ³]	NOx [g/10 ⁶ ft ³]		
275000	6.02E+08	0.59	2491.5	42582		
50000	1.10E+08	0.11	2491.5	42582		
180000	3.94E+08	0.39	2491.5	42582		
505000	1.11E+09	1.08	2491.5	42582	2,701	46,170
				Total Grams	18,001	234,650
				Total Pounds	40	516
				Total Tons	0.02	0.26

Emission factors, from AP-42 Table 3.3 (< 600 HP) and Supplement D-1 (< 0.3 MMBtu/Hr),

Natural Gas Heat Capacity 1020BTU/ft³ (per AP-42 1.4.1)

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Table 6-5
Estimated Equipment Use [Hours]

	Roadway Construction	Building Fabrication	Parking Lots	Walking Trails	Total Project Hours
Air Compressor	0	480	0	0	480
Asphalt Paver	140	0	70	0	210
Cement and Mortar Mixer	0	960	0	0	960
Chain Saw	160	120	0	120	440
Excavator	280	280	140	0	700
Generator Sets <50 hp	140	620	40	0	800
Grader	120	120	50	90	380
Leaf Blowers/Vacuums	0	60	0	0	60
Off Highway Trucks	700	700	80	0	1480
Other General Industrial Equipment	0	480	0	0	480
Other Lawn and Garden Equipment	40	120	40	60	260
Other Material Handling Equipment	160	150	210	160	720
Plate Compactor	80	80	40	0	200
Pressure Washers	40	280	20	30	370
Roller	260	120	110	0	490
Scraper	120	0	0	120	300
Stump Grinder	0	80	0	90	170
Trenchers	0	480	0	0	480
Trimmer/Edger/Brushcutter	0	60	80	60	200
Pick-up Trucks (heavy duty)	320	875	200	120	1515
Dump Trucks (heavy duty)	1260	3540	560	195	5555

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**Table 6-6
Construction Emission Calculations Supporting the Record of Non-Applicability (RONA)**

Equipment Type	VOC Adjustment Factor	NO _x Adjustment Factor	Hours per Day	Equipment Factor	Annual Hours	VOC [g/hr]	NO _x [g/hr]	VOC [g]	NO _x [g]
Trimmer/Edger/Brushcutter	1	1	1	91%	200	0.76	5.23	139	952
Chain Saw	1	1	2	70%	440	0.76	5.23	470	3,222
Leaf Blowers/Vacuums	1	1	2	94%	60	0.76	5.23	86	590
Other Lawn and Garden Equipment	1	1	3	43%	260	0.76	5.23	256	1,754
Pressure Washers	1	1	8	85%	370	0.76	5.23	1,919	13,158
Cement and Mortar Mixer	1	1	11	59%	960	0.76	5.23	4,753	32,584
Plate Compactor	1	1	14	55%	200	0.44	4.44	675	6,837
Trenchers	1.05	0.95	20	59%	480	0.44	4.44	2,605	23,890
Generator Sets <50 hp	1	1	22	68%	800	0.44	4.44	5,242	53,137
Air Compressor	1	1	37	56%	480	0.29	4.73	2,874	47,022
Roller	1.05	0.95	45	59%	490	0.29	4.73	3,948	58,432
Stump Grinder	1	1	75	43%	170	0.52	5.60	2,858	30,695
Other General Industrial Equipment	1	1	107	43%	480	0.34	5.65	7,473	124,830
Other Material Handling Equipment	2.29	1.1	111	41%	1020	0.34	5.65	35,973	288,619
Asphalt Paver	1.05	0.95	121	66%	210	0.34	5.65	5,959	90,053
Excavator	1.05	0.95	143	59%	700	0.34	5.65	20,985	317,128
Grader	1.05	0.95	147	59%	380	0.34	5.65	11,710	176,971
Off Highway Trucks	1.05	0.95	214	59%	1480	0.31	5.58	60,530	990,073
Scraper	1.05	0.95	290	59%	230	0.31	5.58	12,747	208,506
Personal Vehicles	70	2	27.9	265	Total Miles Driven	VOC [g/mile]	NO_x [g/mile]		
					295,740	0.661	0.72	684,194	743,195
			Annual Usage [Hours]	Speed Limit	Total Miles Driven	VOC [g/mile]	NO_x [g/mile]		
			1515	35	53,025	1.43	3.99	75,720	211,411
			5555	35	194,425	2.10	8.13	408,293	1,580,675
							Total Grams	1,349,408	5,003,733
							Total Pounds	2,969	11,008
							Total Tons	1.48	5.50

All emission factors and calculations based on EPA Nonroad Engine and Vehicle Emission Study and AP-42 Highway Mobile Source Emission Factors.

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Appendix C
Draft Record of Non-Applicability (RONA) to the
General Conformity Rule

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MEMORANDUM OF RECORD

SUBJECT: Record of Non-Applicability (RONA) to the General Conformity Rule for the No Action Alternative to the Construction of the DCEETA Remote Delivery Facility, Fort Belvoir Virginia.

DATE PREPARED: June 16, 2005

Under the No Action Alternative, the DCEETA Remote Delivery Facility would not be constructed. No construction or demolition would take place. There would be no changes to operations or vehicle traffic. General Conformity under the Clean Air Act, Section 176 has been evaluated according to the requirements of 40 CFR 93, Subpart B. The requirements of this rule are not applicable to this alternative because:

There are no direct or indirect emissions from the implementation of the no-action alternative. Therefore, VOC and NO_x emission are below the conformity threshold values established at 40 CFR 93.153 (b) of 50 tons VOCs and 100 tons NO_x and are not regionally significant.

Supported documentation and emission estimates:

- ☐ Are Attached
- ☐ Appear in the NEPA Documentation
- ☒ Other (Not Necessary)



PATRICK M. MCLAUGHLIN
Chief
Environmental and Natural Resource Division
US Army Garrison, Fort Belvoir

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MEMORANDUM OF RECORD

SUBJECT: Record of Non-Applicability (RONA) to the General Conformity Rule for the Proposed Construction of the DCEETA Remote Delivery Facility, Fort Belvoir Virginia.

DATE PREPARED: June 16, 2005

The proposed construction of the DCEETA Remote Delivery Facility, Fort Belvoir Virginia would include construction of new buildings including the EDA, PPA, CC, delivery screening facility, the shipping and receiving warehouse, the access control point, the fuel unloading station and perimeter fence; construction of associated parking areas; construction and modification of roadways; and construction of foot trails. This includes minor traffic pattern changes. General Conformity under the Clean Air Act, Section 176 has been evaluated according to the requirements of 40 CFR 93, Subpart B. The requirements of this rule are not applicable to this alternative because:

Total direct and indirect emissions from this alternative have been estimated at 1.48 tons VOCs and 5.50 tons NO_x per year, which are below the conformity threshold values established at 40 CRF 93.153 (b) of 50 tons VOCs and 100 tons NO_x and are not regionally significant.

Supported documentation and emission estimates:

- ☐ Are Attached
- ☒ Appear in the NEPA Documentation
- ☐ Other (Not Necessary)



PATRICK M. MCLAUGHLIN
Chief
Environmental and Natural Resource Division
US Army Garrison, Fort Belvoir

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Appendix D

Natural Resources

Table 6-7
Regional Geology in the Fort Belvoir Area

Age	Formation	Subunits	Characteristics
Tertiary Unconformity	Alluvium		terrace deposits of sands, gravels, cobbles
Cretaceous (early) Unconformity	Shirley		massive marine sediment wedge; occurs south of Occoquan River. <i>Not present on Fort Belvoir.</i>
	Bacon's Castle		
	Potomac Fluvial-deltaic & Marginal marine sediments 200 - 300 foot (60 - 90 m) thick	Albirupear (upper)	inter-fingering lenses of felspathic sands, silt, and clay of differing thickness. <i>Not present on Fort Belvoir</i>
		Iron Ore Clays	<i>Not present on Fort Belvoir</i>
		Aquia Creek (middle)	inter-fingering lenses of sand, silt, and clay of differing thickness.
		Mt. Vernon Clays	a thick clay wedge of chocolate-colored silt, clays interbedded with layers of sandy clays and sand lenses.
		Rappahannock (lower)	inter-fingering lenses of felspathic sands, silt, and clay of differing thickness.
		James River Clays	also called Nanjemoy-Marlboro
Upper Ordovician (early Paleozoic)	-	-	Granitic Intrusives
Precambrian (Proterozoic)	Piedmont Plateau	basement complex	undifferentiated meta-sedimentary/meta-igneous rocks.

Sources: Larson and Froelich, 1977; Law Engineering and Environmental Services, 1995; Ward, 1895; Mixon et al., 1989, as cited in Hobson, 1996.

Table 6-8
Wildlife Species Typical of Upland Hardwood Habitats on Fort Belvoir

Scientific Name	Common Name
Mammals	
<i>Sylvilagus floridanus</i>	Eastern cottontail rabbit
<i>Sorex longirostris</i>	Southeastern shrew
<i>Blarina brevicauda</i>	Northern Short-tailed shrew
<i>Peromyscus leucopus</i>	White-footed Mouse
<i>Microtus pinetorus</i>	Pine Vole
<i>Sciurus carolinensis</i>	Eastern Gray Squirrel
<i>Glaucomys volans</i>	Southern Flying Squirrel
<i>Tamias striatus</i>	Eastern Chipmunk
<i>Marmota monax</i>	Woodchuck
<i>Odocoileus virginianus</i>	White-tailed Deer
<i>Procyon lotor</i>	Raccoon
<i>Didelphis virginiana</i>	Virginia possum
<i>Mephitis mephitis</i>	Striped skunk
<i>Vulpes vulpes</i>	Red fox
<i>Felis catus</i>	Feral cats
Birds	
<i>Corvus brachyrhynchos</i>	American crow
<i>Turdus migratorius</i>	American robin
<i>Sturnus vulgaris</i>	European starling
<i>Passer domesticus</i>	House sparrow
<i>Cyanocitta cristata</i>	Blue jay
<i>Otus asio</i>	Eastern Screech Owl
<i>Strix varia</i>	Barred Owl
<i>Melanerpes carolinus</i>	Red-billed Woodpecker
<i>Picodes pubescens</i>	Downy Woodpecker
<i>Picodes villosus</i>	Hairy Woodpecker
<i>Colaptes auratus</i>	Northern Flicker
<i>Sayornis phoebe</i>	Eastern Phoebe
<i>Myiarchus cinerascens</i>	Great crested Flycatcher
<i>Parus carolinensis</i>	Carolina Chickadee
<i>Parus bicolor</i>	Tufted Titmouse
<i>Sitta carolinensis</i>	White-breasted Nuthatch
<i>Thryothorus ludovicianus</i>	Carolina Wren
<i>Regulus calendula</i>	Ruby-crowned Kinglet
<i>Catharus fuscescens</i>	Veery
<i>Hylocichla mustelina</i>	Wood Thrush
<i>Catharus minimus</i>	Gray-cheeked Thrush
<i>Catharus ustulatus</i>	Swainson's Thrush
<i>Vireo olivaceus</i>	Red-eyed Vireo
<i>Vermivora peregrina</i>	Tennessee Warbler
<i>Dendroica magnolia</i>	Magnolia Warbler
<i>Dendroica coronata</i>	Yellow-rumped Warbler
<i>Wilsonia citrina</i>	Hooded Warbler
<i>Helminthophila vermivorus</i>	Worm-eating Warbler
<i>Dendroica magnolia</i>	Magnolia Warbler
<i>Cardinalis cardinalis</i>	Northern cardinal
<i>Carpodacus mexicanus</i>	House Finch
<i>Buteo jamaicensis</i>	Red-tailed Hawk
<i>Accipiter cooperii</i>	Cooper's Hawk
<i>Catharus guttatus</i>	Hermit Thrush
<i>Regulus satrapa</i>	Golden-crowned Kinglet

<i>Seiurus noveboracensis</i>	Northern Waterthrush
<i>Sphyrapicus varius</i>	Yellow-bellied Sapsucker
<i>Troglodytes troglodytes</i>	Winter Wren
<i>Piranga olivacea</i>	Scarlet Tanager
<i>Carduelis tristis</i>	American Goldfinch
<i>Junco hyemalis</i>	Dark-eyed junco
<i>Larus delawarensis</i>	Ring-billed gull
<i>Zonotrichia albicollis</i>	White-throated sparrow
Amphibians	
<i>Plethodon cinereus</i>	Red-backed Salamander
<i>Plethodon glutinosus</i>	Slimy Salamander
<i>Bufo americanus</i>	American Toad
<i>Bufo woodhousei fowleri</i>	Fowler's Toad
<i>Rana catesbeiana</i>	American Bullfrog
<i>Rana clamitans</i>	Green Frog
<i>Rana palustris</i>	Pickerel Frog
Reptiles	
<i>Coluber constrictor</i>	Northern black racer (Snake)
<i>Elaphe obsoleta</i>	Rat Snake
<i>Thamnophis sirtalis</i>	Eastern garter snake
<i>Terrapene Carolina</i>	Eastern Box Turtle
<i>Coluber constrictor</i>	Northern black racer snake
<i>Thamnophis sirtalis</i>	Eastern garter snake
<i>Eumeces fasciatus</i>	Five-lined skink
Insects	
<i>Gerris remigis</i>	Common water strider
<i>Baetis spp.</i>	Mayfly
Benthic invertebrates	
<i>Chironimidae spp.</i>	Midges
<i>Gastropoda spp.</i>	Snails
<i>Gammarus spp.</i>	Amphopods
<i>Oligochaeta spp.</i>	Worms

Derived from Ernst, et al., 1990 and Abbott, 1988

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Appendix E

Detailed Mitigation Measures

To effectively control runoff and reduce soil erosion during and after construction, the contractor will prepare a storm water management plan to:

- Provide silt fences on slopes to trap water borne sediments;
- Seed and mulch denuded areas as soon as possible with annual grasses to minimize soil exposure to 14 days;
- Store and spread topsoil on graded areas;
- Place hay bales and stabilization grids to keep the soil in place;
- Construct berms, sediment traps, and infiltration trenches;
- Confine construction activities to discrete areas of workable size;
- Landscape all denuded slopes to eventually restore forest cover and beautify the area;
- Collect and discharge storm water into existing BMP-designed storm water systems;
- Provide check dams for diversion ditches with high surface water flows;
- Provide sediment basins at storm water runoff outlets;
- Construct diversion dikes or ditches upgradient of construction areas to carry drainage from the dikes/ditches around construction areas.
- Provide riprap at storm water discharge points.
- Comply with the Storm Water Pollution Prevention Plan (SWPPP) and VPDES General Construction Storm Water Permit.
- Protect receiving waters and adjacent properties from erosion and sedimentation; and
- Minimize adverse impacts to water quality and aquatic biota.

To mitigate impacts on vegetation and wildlife habitat, the contractor will:

- Protect existing trees to the extent feasible by removing only those trees that will interfere with proper alignment and grading for buildings, roads and parking lots;
- Plant trees and shrubs to replace those lost after clearing and grading;
- Remove the least amount of native vegetation possible during clearing;
- Revegetate areas adjacent to the shoulder with herbaceous and woody species to provide for aesthetics and food and cover for wildlife;
- Implement urban forest management requirements stated in Fort Belvoir's Tree Removal and Protection Policy, 220-22-00, dated August 15, 2000, that requires two new trees to be planted for each tree greater than four inches in diameter that is removed (sizes, species, and locations of new trees will be recommended by ENRD);
- Adopt site-planning techniques to minimize retention and protection of existing trees before considering removal;
- Implement infiltration practices that allow storm water to make contact with sandy soils;
- Plant native wetland plants in storm drainage areas to promote water quality through infiltration and/or filtration;
- Designs will allow for solids to settle from the storm water prior to deadly storms; and

- Landscape with a mixture of deciduous shade and flowering trees, such as maple, southern red oak and eastern redbud. Seedlings, such as dogwood, viburnum, euonymus, and deerberry will be interspersed through out the landscaping.

To mitigate impacts on air quality during construction, the construction contractor will:

- Limit the size of clearing and use water or chemicals to control dust during land clearing and road construction;
- Moisten truckloads of potentially dusty materials, and wash down public roads used by the equipment during construction;
- Avoid usage of cutback asphalt or impervious surfaces during the months of April through October (State Rule 4-39);
- Cover truck beds during construction and hauling;
- Cover, water, or spray non-VOC chemicals on excavation piles to suppress fugitive dust emissions;
- Wash down construction equipment vehicles to minimize the creation of fugitive dust;
- Perform periodic street sweeping; and
- If possible, wet down paved surfaces in the construction site vicinity (State Rule 5-1).

Other mitigation measures the contractor will adopt are:

- Minimize the potential for groundwater contamination by following the recommendations in the Best Management Practices Handbook: Sources Affecting Groundwater.
- Minimize the potential of hazardous substances spills through the development of a site-specific Master Spill Plan that describes proper procedures for parking, fueling and maintenance of construction vehicles on-site.
- Collect and dispose of soils contaminated with petroleum-based compounds from leaks or spills from construction vehicle repair and refueling.
- Consider traffic management measures, such as reducing speeds and truck restrictions. Speed reduction would result in unperceivable noise reduction. Typically, a 10 mph reduction would result in a 2-dBA decrease in noise level.
- Mitigate noise impacts by restricting construction to daytime hours.
- Implement traffic management measures to restrict truck traffic and reduce speeds on the installation. Heavy equipment delivery will occur planned during non-peak traffic congestion hours or nocturnal hours.
- Restrict construction to daytime hours to mitigate noise impacts.
- Develop a site-specific spill contingency plan and keep adequate spill containment and spill absorption equipment on hand.
- Collect and dispose of soils contaminated by leaks or spills from construction vehicle repair and refueling.

Appendix F
Endangered Species Consultation Letters

W. Tayloe Murphy, Jr.
Secretary of Natural
Resources



Joseph H. Maroon
Director

COMMONWEALTH of VIRGINIA

DEPARTMENT OF CONSERVATION AND RECREATION

217 Governor Street
Richmond, Virginia 23219-2010
Telephone (804) 786-7951 FAX (804) 371-2674 TDD (804) 786-2121

March 3, 2005

Michael Munson
Paciulli, Simmons & Associates
11212 Waples Mill Road, Suite 100
Fairfax, VA 22030-7404

Re: Construction of a Remote Delivery Facility at US Army Garrison Fort Belvoir, Fairfax County

Dear Mr. Munson:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

According to the information currently in our files, this site may support habitat appropriate for Northern Virginia well amphipod (*Stygobromus phreaticus*, G1/S1/NL/NL). The northern Virginia well amphipod is a distinctive species of subterranean crustacean that inhabits groundwater habitats and is best sought in springs and seepage habitats (where groundwater intersects the surface environment). The Northern Virginia well amphipod has also been found in wells and is believed to generally inhabit deeper groundwater environments. This species has a very limited range; it has been documented at only three sites, including historical collections obtained from wells in Alexandria (1921) and Vienna (1948) in northern Virginia (suburbs of Washington, D.C.). The exact locations of both collection sites are unknown, but they are presumed to have been destroyed by subsequent urbanization. The only recent collections (1996 and 2003) are from a ravine seepage habitat on the Fort Belvoir Military Reservation in Fairfax County, Virginia.

Due to the potential for this site to support populations of the Northern Virginia well amphipod, DCR has been subcontracted to survey for this species. If natural heritage resources are found, we can more accurately evaluate if there will be any impacts to natural heritage resources and if needed offer specific recommendations for minimizing impacts.

Our files do not indicate the presence of any State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the Virginia Department of Conservation and Recreation (DCR), DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

The absence of data may indicate that the project area has not been surveyed, rather than confirm that the area lacks natural heritage resources. New and updated information is continually added to Biotics. Please contact DCR for an update on this natural heritage information if a significant amount of time passes before it is utilized.

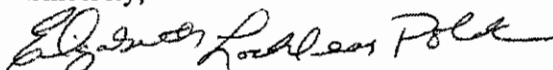
Due to an increasing number of requests and limiting staffing resources, effective July 1, 2003 DCR-DNH will require 30 days to comment on projects submitted for our review.

A fee of \$95.00 has been assessed for the service of providing this information. Please find enclosed an invoice for that amount. Please return one copy of the invoice along with your remittance made payable to the Treasurer of Virginia, Department of Conservation and Recreation, 203 Governor Street, Suite 414, Richmond, VA 23219, ATTN: Cashier. Payment is due within thirty days of the invoice date.

The Virginia Department of Game and Inland Fisheries maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters, that may contain information not documented in this letter. Their database may be accessed from http://www.dgif.virginia.gov/wildlife/info_map/index.html, or contact Shirl Dressler at (804) 367-6913.

Should you have any questions or concerns, feel free to contact S. René Hypes at 804-371-2708. Thank you for the opportunity to comment on this project.

Sincerely,


for S. René Hypes
Project Review Coordinator



COMMONWEALTH of VIRGINIA

W. Tayloe Murphy, Jr.
Secretary of Natural Resources

Department of Game and Inland Fisheries

William L. Woodfin, Jr.
Director

March 4, 2005

Michael Munson
Staff Environmental Scientist
Paciulli, Simmons, & Associates, Ltd.
11212 Waples Mill Road, Suite 100
Fairfax, Virginia 22030-7404

RE: ESSLOG #20189, Construction of a Remote Delivery Facility at U.S. Army Garrison, Fort Belvoir, Fairfax County, VA.

Dear Mr. Munson:

This letter is in response to your request for information related to the presence of threatened or endangered species in the vicinity of the above referenced project.

The federal threatened/state threatened bald eagle (*Haliaeetus leucocephalus*) has been documented approximately 1.5 miles from this project area. As well, the following state threatened species have been documented at approximately the given distance from this project area:

**wood turtle (*Clemmys* (=Glyptemys) *insculpta*) at 1 mile, and
peregrine falcon (*Falco peregrinus*) at 1.5 miles.**

Also, this project is approximately 0.25 mile from a tributary to Dogue Creek, which has been designated as a Threatened and Endangered Species' Water due to documented occurrences of the state threatened wood turtle (*Clemmys* (=Glyptemys) *insculpta*). Therefore, the applicant should coordinate with the VDGIF Environmental Services Section, (804-367-6913) concerning potential impacts to these species and resource.

Also, the following state special concern species have been documented approximately 1.5 miles from this project area:

least tern (*Sterna antillarum*);
Caspian tern (*Sterna caspia*);
long-eared owl (*Asio otus*);
alder flycatcher (*Empidonax alnorum*);
red-breasted nuthatch (*Sitta canadensis*);
brown creeper (*Certhia americana*);
winter wren (*Troglodytes troglodytes*);
hermit thrush (*Catharus guttatus*);
golden-crowned kinglet (*Regulus satrapa*);
yellow-crowned night-heron (*Nyctanassa violacea*);

glossy ibis (*Plegadis falcinellus*);
bridle shiner (*Notropis bifrenatus*);
northern harrier (*Circus cyaneus*);
magnolia warbler (*Dendroica magnolia*); and
purple finch (*Carpodacus purpureus*).

As well, the *state special concern* mourning warbler (*Oporornis philadelphia*) has been documented within 0.5 mile of this project area. However, the classification of *state special concern* is not a legal designation and does not require further coordination.

Information about fish and wildlife species was generated from our agency's computerized Virginia Fish and Wildlife Information Service (VAFWIS), which describes animals that are known or may occur in a particular geographic area. Field surveys may be necessary to determine the presence or absence of some of these species on or near the proposed area. Also, additional sensitive animal species may be present, but their presence has not been documented in our information system.

Endangered plants and insects are under the jurisdiction of the Virginia Department of Agriculture and Consumer Services, Bureau of Plant Protection. Questions concerning sensitive plant and insect species occurring at the project site should be directed to Keith Tignor at (804) 786-3515.

The Virginia Department of Conservation and Recreation, Natural Heritage Program, maintains a database of natural heritage resources, including the habitat of rare, threatened, or endangered plant and animal species, unique exemplary natural communities, and significant geologic formations, that may contain information not documented in this letter. Their database may be accessed from <http://www.dcr.state.va.us/dnh/nhrinfo.htm>, or by contacting S. Rene Hypes at (804) 371-2708.

There is a processing charge of \$25.00 for our response. Please remit a check, made payable to **TREASURER OF VIRGINIA**, within 30 days. To insure proper credit to your account, please address your payment envelope directly to MaryBeth Murr at the address listed in the letterhead.

This letter summarizes the likelihood of the occurrence of endangered or threatened animal species at the project site. If you have additional questions in this regard, please contact me at (804) 367-1185.

Please note that this response does not constitute consultation or management recommendations regarding endangered or threatened wildlife, or any other environmental concerns. These issues are analyzed by our Environmental Services Section, in conjunction with interagency review of applications for state and federal permits. If you have any questions in this regard, please contact the Environmental Services Section at (804) 367-6913.

Michael Munson
ESSLog #20189
3/4/2005
Page 3

Please note that the data used to develop this response are continually updated. Therefore, if significant changes are made to your project or if the project has not begun within 6 months of receiving this letter, then the applicant should request a new review of our data.

The Fish and Wildlife Information Service, the system of databases used to provide the information in this letter, can now be accessed via the Internet! The Service currently provides access to current and comprehensive information about all of Virginia's fish and wildlife resources, including those listed as threatened, endangered, or special concern; colonial birds; waterfowl; trout streams; and all wildlife. Users can choose a geographic location and generate a report of species known or likely to occur around that point. From our main web page, at www.dgif.virginia.gov, choose the hyperlinks to "Wildlife" then "Wildlife Information and Mapping Services", and then "Virginia Fish and Wildlife Information Service". For more information about the service, please contact Shirl Dressler at (804) 367-6913.

Thank you for your interest in the wildlife resources of Virginia.

Sincerely,

A handwritten signature in black ink, appearing to read "Susan H. Watson". The signature is fluid and cursive, with a large initial "S".

Susan H. Watson
Research Specialist Senior

cc: R.T. Fernald, VDGIF
R. Hypes, VDCR-NH

7 RELATIONSHIP OF THE PROPOSED ACTION TO FEDERAL, STATE, AND LOCAL PLANS, POLICIES AND CONTROLS

The implementation of the proposed action would comply with federal regulations and with state, regional, and local policies and programs. The federal acts, executive orders, and policies with which the proposed action must demonstrate compliance include:

- National Environmental Policy Act (NEPA).
- Clean Water Act (CWA).
- Clean Air Act (CAA).
- CERCLA, SARA, and EPCRA.
- Endangered Species Act (ESA).
- National Historic Preservation Act (NHPA).
- Coastal Zone Management Act (CZMA).
- Executive Order 11988, Floodplain Management.
- Executive Order 11990, Protection of Wetlands.
- Executive Order 12372, Coordination with State and Regional Agencies.
- Executive Order 12898 Environmental Justice.
- Executive Order 13045, Protection of Children.
- Executive Order 13101, "Greening" the Government through Waste Prevention, Recycling, and Federal Acquisition.
- Executive Order 13148, "Greening" the Government through Leadership in Environmental Management.
- Procedures for Abatement of Highway Traffic Noise 23 CFR 772.

7.1 National Environmental Policy Act (NEPA)

This Environmental Assessment has been prepared in accordance with the Council on Environmental Quality (CEQ) regulations implementing National Environmental Policy Act of 1969 - NEPA (40 CFR Part 1500-1508) and Army Regulation (AR) 200-2, "Environmental Effects of Army Actions" at 32 CFR Part 651. Executive Order 11991 of May 24, 1977 directed the CEQ to issue regulations for procedural provisions of NEPA; these are binding for all federal agencies.

A number of federal laws, regulations, and policies regulate activities in wetlands, namely:

- Section 404 of the Clean Water Act (CWA) establishes that the Corps of Engineers require permits for the discharge of dredged and fill material into "waters of the US," a term that includes most wetlands.

- Executive Order 11990, *Protection of Wetlands* requires federal agencies to take action to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands.
- The North American Wetlands Conservation Act, 16 USC S4408 requires the restoration, management, and protection of wetlands and habitats for migratory birds on federal lands.
- The Wetlands Resources Act, 16 USC S3901 calls for intensifying cooperative efforts among federal, state, and local governments and private interests for the management and conservation of wetlands.

The Commonwealth of Virginia regulates wetlands through a number of laws and provisions as well:

- The Virginia Wetlands Act of 2000 (Title 62.1 of the Code of Virginia) protects tidal wetlands and regulates wetland development.
- The Chesapeake Bay Preservation Act (Sections 10.1-2100 et seq. of the Code of Virginia) allows for the creation of Chesapeake Bay Preservation Areas (RPAs).

Virginia Water Protection Regulations (Virginia Regulations VR 680-15-02) regulate state waters and require a Virginia Water Protection Permit for activities involving wetlands under Section 404 of the CWA.

Virginia Acts of Assembly Chapters 1054 (House) and 1032 (Senate), passed in the 2000 session, amend existing wetland laws to require a Virginia Water Protection Permit for certain activities in non-tidal wetlands.

Under the *Federal Facilities Strategy* and *Federal Work Plan* of 1998 and the 1990 Memorandum of Agreement (MOA) between the USEPA and the DoD, Fort Belvoir has agreed in principle to cooperate with state and local government regulations of the Chesapeake Bay Preservation Act (CBPA) as part of the 1987 Chesapeake Bay Cooperation Agreement. Fort Belvoir is consistent to the extent practicable with the Fairfax County Chesapeake Bay Preservation Ordinance (CBPO). The CBPO was enacted pursuant to the CBPA, Sections 10.1-2100, et seq., of the Code of Virginia. The Fairfax County CBPO divides the county into Resource Protection Areas (RPAs) and Resource Management Areas (RMAs) designed to protect water quality in the Chesapeake Bay and its tributaries.

7.2 Clean Water Act (CWA)

The Clean Water Act (CWA) of 1977 (which amends the Federal Water Pollution Act of 1972) and subsequent amendments were designed to assist in restoring and maintaining the chemical, physical, and biological integrity of the nation's waters. The act covers the discharge of pollutants into navigable waters, wastewater treatment management, and protection of relevant fish, shellfish, and wildlife. Congress also passed the Water Quality Act of 1987 to address the excessive levels of toxic pollutants still found in some waters.

7.3 Clean Air Act (CAA)

The Clean Air Act (CAA) of 1955 and subsequent amendments specify regulations for control of the nation's air quality. Federal and state ambient air standards have been established for each criteria pollutant. The 1990 amendments to the CAA require federal facility compliance with all applicable substantive and administrative requirements for air pollution control.

7.3.1 National Ambient Air Quality Standards (NAAQS)

The US Environmental Protection Agency (USEPA), under the requirements of the 1970 Clean Air Act (CAA) as amended in 1977 and 1990, has established National Ambient Air Quality Standards (NAAQS) for six contaminants, referred to as criteria pollutants (40 CFR 50). These are: ozone (O_3), carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), particulate matter (PM), and lead (Pb). The NAAQS include primary and secondary standards. The primary standards were established at levels sufficient to protect public health with an adequate margin of safety. The secondary standards were established to protect the public welfare from the adverse effects associated with pollutants in the ambient air.

The CAA requires that the USEPA review scientific data every five years to ensure that the NAAQS effectively protect the public health. As a result of one such review, on September 16, 1997 the USEPA enacted a more stringent standard for O_3 . The final standard has been updated from 0.12 parts per million (ppm) of O_3 measured over one hour to a standard of 0.08 ppm measured over eight hours, with the average fourth-highest concentration over a three-year period determining whether an area is in compliance.

Following the promulgation of this revised NAAQS, the CAA provides up to three years for state governors to recommend and the USEPA to designate areas for attainment or non-attainment of the standard according to their most recent air quality data. In addition, states would have up to three years from designation to develop and submit State Implementation Plans (SIPs) for attaining the new standard.

Additionally, a new standard for particulate matter was issued on July 17, 1997 by the USEPA. The standard for PM_{10} remains essentially unchanged, while a new standard for fine particles ($PM_{2.5}$: diameter ≤ 2.5 micrometers) is set at an annual limit of 15 micrograms per cubic meter ($\mu g/m^3$), with a 24-hour limit of $65 \mu g/m^3$. Because this new standard would regulate fine particulates for the first time, the USEPA would allow five years to build a nationwide monitoring network and to collect and analyze the data needed to designate areas and develop implementation plans. Therefore, this standard cannot yet be implemented.

The revised O_3 and new $PM_{2.5}$ standards were contested in court, however, and they were remanded to the USEPA by the District of Columbia Circuit Court of Appeals on May 14, 1999. The USEPA appealed this decision to the Supreme Court, and on February 27, 2001, the Supreme Court reached a decision on this rather complicated matter. In a complex decision, the Supreme Court upheld the USEPA's establishment of the revised ambient air quality standards,

but found fault with USEPA's interpretation of the nonattainment implementation provisions of CAA as they apply to the revised O₃ NAAQS. The Supreme Court remanded the case to the Appeals Court to establish proceedings consistent with its opinions. Hence, the new standards have been upheld by the Supreme Court, but details regarding implementation must be determined by the Court of Appeals before the USEPA can establish regulatory policies and procedures for implementing these standards.

Areas that meet the NAAQS standard for a criteria pollutant are designated as being "in attainment;" areas where a criteria pollutant level exceeds the NAAQS are designated as being "in nonattainment." O₃ nonattainment areas are categorized based on the severity of their pollution problem - marginal, moderate, serious, severe, and extreme. CO and PM₁₀ nonattainment areas are categorized as moderate and serious nonattainment areas. Where insufficient data exist to determine an area's attainment status, it is designated unclassifiable (or attainment).

7.3.2 State Implementation Plan (SIP)

The CAA as amended in 1990 (CAAA) mandates that state agencies adopt SIPs that target the elimination or reduction of the severity and number of violations of the NAAQS. The SIP is a plan that provides for implementation, maintenance, and enforcement of the NAAQS, and it includes emission limitations and control measures to attain and maintain the NAAQS. Conformity to a SIP, as defined in the CAA, means conformity to a SIP's purpose of reducing the severity and number of violations of the NAAQS to achieve attainment of such standards. The federal agency responsible for an action is required to determine if its action conforms to the applicable SIP. SIPs set forth plans to expeditiously achieve and maintain attainment of the NAAQS.

The SIP applicable to this nonattainment area is the *Final State Implementation Plan Revision, Phase I Attainment Plan* (Metropolitan Washington Council of Governments [MWCOG], 1997) and *State Implementation Plan Revision, Phase II Attainment Plan for the Washington DC-MD-VA Nonattainment Area* (MWCOG, 2000).

The SIP sets forth how emissions that contribute to the formation of O₃ would be reduced by 15 percent from 1990 to 1996, and then by three percent per year until the area reaches attainment of the NAAQS. The attainment date for the Washington metropolitan area was 1999, necessitating a 24 percent total reduction in emissions. A plan for reducing emission levels by 15 percent from 1990 to 1996 was approved by the Metropolitan Washington Air Quality Committee (MWAQC) in December 1993. Subsequently, a Post-1996 Rate of Progress Plan was developed and approved by MWAQC in October 1997 with revisions in April 1999. This plan shows how the additional nine percent in reductions required by 1999 would be achieved.

The Phase II Attainment Plan evaluates whether the measures included in the Phase I nine percent plan and other steps being taken are adequate to reach attainment in the Washington metropolitan area. As part of the Phase II Plan, the Washington region must submit a demonstration using an urban air quality model to show that O₃ concentrations would be reduced to levels below the NAAQS. However, the modeling results show that even with the local measures required to meet

the 24 percent rate of progress requirement, air quality in the region would only meet the O₃ NAAQS if overwhelming transport of pollutants into the region from other areas is reduced. MWAQC anticipates that the Washington metropolitan area would attain the O₃ standard based upon data from the O₃ seasons in 2003-2005. Therefore, MWAQC, the states of Maryland and Virginia, and the District of Columbia are requesting an extension of the 1999 attainment date until 2005.

7.3.3 Clean Air Act Conformity

The Clean Air Act Amendments (CAAA) of 1990 require federal agencies to ensure that their actions conform to the appropriate SIP in a nonattainment area. Under Section 176(c) of CAAA, a project is in "conformity" if it corresponds to a SIP's purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of such standards. Conformity further requires that such activities would not:

- (1) Cause or contribute to any new violations of any standards in any area;
- (2) Increase the frequency or severity of any existing violation of any standards in any area; or
- (3) Delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.

The USEPA published final rules on general conformity (40 CFR Parts 51 and 93) that apply to federal actions in areas designated nonattainment for any of the criteria pollutants under the CAAA. The proposed rules specify *de minimis* emission levels by pollutant to determine the applicability of conformity requirements for a project.

The following general conformity rule analysis was conducted according to the guidance provided by the USEPA in *Determining Conformity of General Federal Actions to State of Federal Implementation Plans* (1993). Under the general conformity rule, reasonably foreseeable emissions associated with all operational and construction activities, both direct and indirect, must be quantified and compared to the annual *de minimis* levels for those pollutants for which the area is in non-attainment.

7.4 CERCLA, SARA, and EPCRA

In 1980, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) was passed in order to provide a superfund for cleanup of sites with uncontrolled releases of hazardous substances. This program was continued in the Superfund Amendments and Reauthorization Act (SARA) of 1986. Section 211 of SARA provides continued authorization for the DoD Environmental Restoration Program and the Defense Environmental Restoration Account. Major responsibilities for monitoring compliance with these acts rest with the USEPA. Title III of SARA, the Emergency Planning and Community Right-to-Know Act (EPCRA) was enacted by Congress as the national legislation on community safety. This law was designated to local communities protect public health, safety, and the environment from

chemical hazards. To implement EPCRA, Congress required states be divided into Emergency Planning Districts and appoint a Local Emergency Planning Committee (LEPC) for each district. The Act has four sections: Emergency Planning, Emergency Notification, Hazardous Chemical Reporting and Toxic Chemical Reporting.

7.5 Endangered Species Act (ESA)

Section 7 of the Endangered Species Act (ESA) of 1973 and subsequent amendments provide for the conservation of threatened and endangered species of animals and plants and the habitats in which they are found. The Department of the Army ensures that consultations are conducted as required under Section 7 for any action that “may affect” a federally listed threatened or endangered species (Army Regulation [AR] 200-3, Natural Resources – Land, Forest, Wildlife Management).

7.6 National Historic Preservation Act (NHPA)

The National Historic Preservation Act (NHPA) was passed in 1966 to provide for the protection, enhancement, and preservation of any property that possesses significant architectural, archaeological, historical, or cultural characteristics. Executive Order (EO) 11593 of 1974 further defined the obligations of federal agencies concerning this act. In addition, AR 200-4 specifically requires the Army to adopt stewardship policies relating to historic resources. Section 106 of NHPA requires the head of any federal agency having direct or indirect jurisdiction over a proposed federal or federally financed undertaking, prior to the expenditure of any federal funds on the undertaking, to take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register of Historic Places (NRHP).

Section 106 of the NHPA of 1966 provides that federal agencies take into account the effects of their actions on any district, site, building, structure, or object included in, or eligible for inclusion in, the NRHP. Implementing regulations for Section 106 established by the Advisory Council on Historic Preservation (ACHP) are contained in 36 CFR 800; Protection of Historic Properties, as amended in January 2001. These regulations provide specific criteria for identifying adverse effects on historic properties. The effects of an undertaking on a cultural resource are predicted by evaluating the significant characteristics of the resource and the design and anticipated consequences of the undertaking. Criteria of Adverse Effect is set forth in 36 CFR 800.5(a)(1).

Implementation of the proposed action must comply with the NHPA of 1966, as amended. The intent of the NHPA is to integrate consideration of historic preservation issues into the early stages of project planning by a federal agency. Accordingly, under Section 106 of the NHPA, the head of any federal agency having direct or indirect jurisdiction over a proposed federal or federally financed undertaking is required – before the expenditure of any federal funds on that undertaking – to account for its effects on any district, site, building, structure, or object that is included or eligible for inclusion in the NRHP. This requires agency notification and

consultation with the State Historic Preservation Office (SHPO) and other interested parties on the effect of the proposed action.

7.7 Coastal Zone Management Act (CZMA)

The Coastal Zone Management Act (CZMA) of 1972 (16 USC § 1451, et seq., as amended) provides assistance to states, in cooperation with federal and local agencies, for developing land and water use programs in coastal zones. Section 307 of the CZMA stipulates that federal projects that affect land uses, water uses, or coastal resources of a state's coastal zone must be consistent to the maximum extent practicable with the enforceable policies of that state's federally approved coastal management plan.

Federal agencies are directed by Section 307(c)(1) of the Coastal Zone Management Act Reauthorization Amendment (CZMARA) to ensure that their actions be consistent with state Coastal Zone Management Program (CZMP) policies to the maximum extent practicable. In Virginia, the Coastal Resources Management Plan (CRMP) is based on application of policies and goals within a core of eight commonwealth regulatory programs, including Fisheries Management, Subaqueous Lands Management, Wetlands Management, Dunes Management, Nonpoint Source Pollution Control, Point Source Pollution Control, Shoreline Sanitation, and Air pollution Control. Compliance with and receipt of approvals from these programs implies consistency with CZMP requirements.

The proposed action would have no effect that would fall within the purview of the Commonwealth of Virginia's current coastal legislation and enforceable policies as described in the state's federally approved CRMP.

7.8 Executive Order (EO) 11988, Floodplain Management

Executive Order (EO) 11988, *Floodplain Management*, sets forth the responsibilities of federal agencies in reducing the risk of flood loss or damage to personal property, minimizing the impact of flood loss, and restoring the natural and beneficial functions of floodplains. The order was issued in furtherance of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

Floodplains are significant as a physical feature of the landscape, as a master planning designation for conservation of certain resource values and flood insurance planning, and as a regulatory designation for Executive Order 11988 (Floodplain Management) and Chesapeake Bay Local Assistance Department (CBLAD) regulations. From a planning perspective, EO 11988 sets forth the responsibilities of federal agencies in reducing the risk of flood loss or damage to personal property, minimizing the impact of flood loss, and restoring the natural and beneficial functions of floodplains. Flood insurance maps, approximately depicting the 100-year floodways and 100- and 500-year floodplains, have been prepared by the Federal Emergency Management Agency (FEMA) and are used to determine design requirements for new projects that would encroach on designated areas.

7.9 Executive Order (EO) 11990, Protection of Wetlands

Executive Order (EO) 11990, *Protection of Wetlands*, signed May 24, 1977, directs federal agencies to take action to protect wetlands on their property and mandates review of proposed actions on wetlands through procedures established by NEPA. The proposed action would have no adverse impact on wetlands.

Nationwide Permit 26 allows discharges affecting up to one acre of headwater and isolated wetlands to occur without notifying the Corps of Engineers. When more than one acre of wetlands are affected a Clean Water Act (CWA) Section 404 permit is required (Bigelow, 1992). The VDOT, as builder, would obtain the necessary permit entitled "General Permit, DA, Norfolk District OE, Virginia Marine Resources Commission," dated July 13, 1988 for any delineated wetland acreage.

7.10 Executive Order (EO) 12372, Coordination with State and Regional Agencies

Executive Order (EO) 12372, *The Presidential Intergovernmental Review of Federal Programs*, signed on July 14, 1982, directs the Army to pursue close and harmonious planning relations with local and regional agencies and planning commissions of adjacent cities, counties, and states for cooperation and resolution of mutual land use and environmentally-related problems. In addition, notification may be made to state and regional planning clearinghouses. This EA, information from relevant state, regional, and local agencies was reviewed for data on potential impacts of the proposed action, including that of Fairfax County.

7.11 Executive Order (EO) 12898, Environmental Justice

Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, signed on February 11, 1994, aims to prevent minority and low-income communities being disproportionately affected by the negative impacts on the environment of federal actions. EO 12898 directs all federal departments and agencies to incorporate environmental justice considerations in achieving their mission. Each federal department or agency accomplishes this by evaluating programs, policies, and activities that may substantially affect human health or the environment in a manner that does not exclude communities from participation in, deny communities the benefits of, nor subject communities to discrimination under such actions because of their race, color, or national origin.

7.12 Executive Order (EO) 13045, Environmental Protection of Children

Executive Order (EO) 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, signed on April 21, 1997, aims to prevent children being disproportionately affected by such impacts. Because the scientific community recognized that children may suffer disproportionately from environmental health and safety risks, each federal agency is directed to

identify and assess such risks, and consequently to ensure that its policies, programs, activities, and standards address effects on children. "Environmental health and safety risks" are defined as "risks to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest." Covered regulatory actions that are affected by this EO are those substantive actions that concern an environmental health risk or safety risk that an agency has reason to believe may disproportionately affect children.

7.13 Executive Order (EO) 13101, "Greening" the Government through Waste Prevention, Recycling, and Federal Acquisition

Executive Order (EO) 13101, "*Greening" the Government through Waste Prevention, Recycling, and Federal Acquisition*", directs the Army agencies to ensure that strategies are established to support environmental promoting the purchase of green products, through both environmentally preferable purchasing (EPP) and comprehensive procurement guidelines (CPG) or buy-recycled program. The Resource Conservation Challenge (RCC) looks to reduce solid and hazardous waste, proactively analyze environmental impacts, and promote environmental stewardship on federal lands.

7.14 Executive Order (EO) 13148, "Greening" the Government through Leadership in Environmental Management

Executive Order (EO) 13148, "*Greening" the Government through Leadership in Environmental Management*", directs the Army agencies to ensure that strategies are established to support environmental leadership programs, policies, and procedures and that agency senior level managers explicitly and actively endorse these strategies through development and implementation of environmental management systems, such as environmentally and economically beneficial landscaping; promoting environmental management and leadership; environmental compliance, right-to-know and pollution prevention, release and use reduction of toxic chemicals; reductions in Ozone Depleting substances; and emergency planning, community right-to-know, and pollution prevention.

7.15 Procedures for Abatement of Highway Traffic Noise and Noise Construction - 23 CFR 772

The Federal Highway Administration (FHWA) has established procedures and criteria to determine and evaluate impacts associated with vehicular use of roadways. The primary problems associated with highway noise are activity interference and general annoyances. Therefore, it is the goal of abatement programs to minimize these impacts to exterior land uses. The decibel is the basic unit of sound measurement, and represents, relative acoustic energy intensities, such as traffic noise is the sound generated by automobiles and trucks on streets and highways. The sound generated is a composite of tire, engine, and exhaust noise. People respond differently to sound energy in varying acoustic frequency ranges. Sounds heard in the

environment usually consist of a range of frequencies, each at a different level. The method of correlating human response to equivalent sound pressure levels at different frequencies is called “weighting”. The weighting system used to correlate human hearing to frequency response is the “A-weighting scale” and the resultant sound pressure level is called “A-weighted sound pressure level”. This is generally abbreviated by the expression dB(A). The dB(A) is generally used in assessing community noise exposure because this scale closely approximates the frequency response of the human ear. The A-weighted equivalent sound level (L_{eq}) is the descriptor used most frequently in highway noise analyses.

The L_{eq} is the equivalent steady state sound level which represents the mean energy or sound intensity level for a given time period. This is the descriptor that would be used in this highway noise analysis. The FHWA guidelines prescribe the use of the hourly equivalent sound level ($L_{eq}[h]$) as the primary descriptor for noise analysis. $L_{eq}(h)$ is defined as the equivalent steady state sound level, which in one hour contains the same acoustic energy as the time-varying sound level during the same one-hour period.

8 ACROYNMS, ABBREVIATIONS AND CONVERSIONS

Acronym	Definition
AASHTO	American Association of State Highway Officials
ac	acres
ACHP	Advisory Council on Historic Preservation
ADT	Average daily traffic
AM	12 Midnight to 12 Noon
AMC	Army Materiel Command
AMSL	Above Mean Sea Level
APE	Area of potential effect
AR	Army Regulation
AST	Above ground storage tank
ASTM	American Standards Testing and Measurements
AT/FP	Antiterrorism/Force Protection
ATM	Asynchronous Transfer Mode
BMO	Beech Mixed Oak
BMPs	Best management practices
BRAC	Defense Base Closure and Realignment Commission
BWP	Belvoir Woods Parkway
°C	degrees Centigrade
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CAMA	Coastal Area Management Act
CBLAD	Chesapeake Bay Local Assistance Department
CBPA	Chesapeake Bay Preservation Act
CBPO	Chesapeake Bay Preservation Ordinance
CC	Conference Center
CDP	Census Designated Place
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cm	centimeters
CO	Carbon monoxide
CPNC	Comprehensive Plan for the National Capital
CRMP	Coastal Resources Management Plan
CWA	Clean Water Act
CX	Categorical exclusion
CZMP	Coastal Zone Management Program
CZMA	Coastal Zone Management Act
CZMARA	Coastal Zone Management Act Reauthorization Amendments
DA	Department of the Army
dB	Decibel
dBA	A-weighted sound pressure level in decibels
dBp	Linear peak sound level

Acronym	Definition
DCEETA	Defense Communications Electronics Evaluation and Testing Activity
DCR	Department of Conservation and Recreation
DEIS	Draft EIS
DIS	Directorate of Installation Support
DLA	Defense Logistics Agency
DNH	Division of Natural Heritage
DNL	Day-night average sound level
DoD	Department of Defense
DRMO	Defense Reutilization and Marketing Office
DSA	Delivery Screening Area
DSV	Daily Service Volume
DSWC	Division of Soil and Water Conservation
DTRA	Defense Threat Reduction Agency
DVP	Dominion Virginia Power
EA	Environmental Assessment
ECP	Entry Control Point
EDA	Explosives Detection Area
EIS	Environmental Impact Statement
EMS	Emergency Medical Service
EMT	Emergency Medical Technician
ENRD	Environmental Natural Resources Division
EO	Executive Order
EPG	Engineer Proving Grounds
ESA	Endangered Species Act
°F	degrees Fahrenheit
FCPS	Fairfax County Public Schools
FCWA	Fairfax County Water Authority
FEIS	Final EIS
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FICON	Federal Interagency Committee on Noise
FNSI	Finding of no significant impact
FR	Federal Register
FS	Feasibility Study
ft	foot
ft ²	Square feet
FWC	Forest and Wildlife Corridor
FY	Fiscal year
gal	gallon
GIS	Geographic Information System
GDP	gallons per day
ha	hectares
HAP	Hazardous Air Pollutant
HEC	Humphries Engineering Center
HQC	Headquarters Complex
HQDA	Headquarters, Department of Army

Acronym	Definition
HUD	Department of Housing and Urban Development
I-95	Interstate-95
ICPRB	Interstate Commission on the Potomac River Basin
INCMP	Integrated Cultural Resources Management Plan
INRMP	Integrated Natural Resources Management Plan
INSCOM	US Army Intelligence and Security Command
IPM	Integrated Pest Management
IRP	Installation Restoration Program
ISDN	Integrated Services Digital Network
km	kilometer
kpy	Kilograms per year
kV	Kilovolts
L	liter
L _{eq} [h]	Hourly A-weighted sound level
LOS	Level of Service
LPD	Liters per day
m	meters
m ²	Square meters
MACOM	Major Army Command
MDW	Military District of Washington
MGD	Million gallons per day
mi	miles
MLD	Million liters per day
mm	millimeter
MOA	Memorandum of Agreement
MP	Military Police
mph	Miles per hour
MSL	Mean sea level
MTMC	Military Transport Management Command
MWAQC	Metropolitan Washington Air Quality Committee
MWCOG	Metropolitan Washington Council of Governments
NAAQS	National Ambient Air Quality Standards
NAC	Noise Ambient Criteria
NAWQA	National Water Quality Assessment
NBS	National Bureau of Standards
NEPA	National Environmental Policy Act
NESHAPS	National Emission Standards for Hazardous Air Pollutants
NCPC	National Capital Planning Commission
NCR	National Capital Region
NHP	National Heritage Program
NHPA	National Historic Preservation Act
NO ₂	Nitrogen dioxide
NO _x	Nitrogen oxide
NOA	Notice of availability
NOI	Notice of intent
NPDES	National Pollutant Discharge Elimination System

Acronym	Definition
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSPS	New Source Performance Standards
O ₃	Ozone
Pb	Lead
PDEIS	Preliminary Draft EIS
PIDS	Personnel Intrusion Detection System
PIF	Partners in Flight
PM	12 Noon to 12 midnight
PM 10	Particulate matter - 10 microns or less
PPA	Personnel Processing Area
ppm	Parts per million
PPMS	Program Project Monitoring System
PX	Post Exchange
RCRA	Resource Conservation and Recovery Act
RDF	Remote Delivery Facility
REC	Record of environmental consideration
RMA	Resource Management Area
ROD	Record of Decision
RPA	Resource Protection Area
RPMP-LRC	Real Property Master Plan-Long Range Component
RW	Right-of-Way
SA	Secretary of the Army
SARA	Superfund Amendments and Reauthorization Act
SCS	Soil Conservation Service
SEIS	Supplemental EIS
SIP	State Implementation Plan
SO ₂	Sulfur dioxide
sq	Square
SWMU	Solid Waste Management Unit
TES	Threatened and endangered species
TMH	Transportation Management Plan
TMP	Tulip Popular Mixed Hardwood
TPM	Total particulate matter
tpy	Tons per year
TSP	Total suspended particulate matter
US 1	U.S. Route 1, Jefferson Davis Highway (Richmond Highway)
USASAC	US Army Security Assistance Command
USALIA	US Army Logistics Integration Agency
USBEA	US Bureau of Economic Analysis
USBLS	US Bureau of Labor Statistics
USC	United States Code
USDA	US Department of Agriculture
USEPA	US Environmental Protection Agency
USFWS	US Fish and Wildlife Service
USGS	US Geological Survey

Acronym	Definition
UST	Underground storage tank
V/C	Volume to capacity ratio
VAC	Code of Virginia
VDACS	Virginia Department of Agriculture and Consumer Services
VDCR	Virginia Department of Conservation and Recreation
VDEQ	Virginia Department of Environmental Quality
VDGIF	Virginia Department of Game and Inland Fisheries
VDHR	Virginia Department of Historic Resources
VDOT	Virginia Department of Transportation
VDWM	Virginia Department of Waste Management
VEDP	Virginia Economic Development Partnership
VMT	Vehicle miles traveled
VOC	Volatile organic compound
VPDES	Virginia Pollutant Discharge Elimination System
VPF	Virginia Pine Forest
VR	Virginia Regulation
VRE	Virginia Railway Express
VSPM	Virginia Stormwater Management Program
WMATA	Washington Metropolitan Area Transit Authority

Conversions

Length:

1 meter (m) = 3.28 feet, 1,000 mm
 1 kilometer (km) = 0.62 miles, or 3,281 feet
 1 millimeter (mm) = 0.03937 inches
 1 mile (mi) = 1.61 km
 1 foot (ft) = 0.305 m

Area:

1 hectare (ha) = 2.47 acres or 10,000 meter²
 1 acre (ac) = 43,560 feet² or 0.405 hectares
 1 meter (m)² = 10.76 feet²
 1 foot (ft)² = 0.093 meter²

Volume:

1 gallon (gal) = 3.8 liters (l)
 1 liter (l) = 0.264 gal

Weight:

1 ton = 1.02 tons (metric)

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